PB-234 435

WATER QUALITY CRITERIA DATA BOOK

VOLUME V, EFFECTS OF CHEMICALS ON AQUATIC LIFE

BATTELLE COLUMBUS LABORATORIES

PREPARED FOR
ENVIRONMENTAL PROTECTION AGENCY

SEPTEMBER 1973

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PB 234 435

W 74-10541

SELECTED WATER RESOURCES ABSTRACTS

INPUT TRANSACTION FORM

1. Report No.

4. Title WATER QUALITY CRITERIA DATA BOOK - VOL. 5 - EFFECTS OF CHEMICALS ON AQUATIC LIFE,

5. Report Date

6.

8. Performing Organization Report No.

7. Author(s)

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9. Battelle Memorial Institute, Columbus, Ohio
Columbus Laboratories

11. Grant No. R-800942

10. EPA Project 18050 HLA

13. Type of Report and Period Covered

15. Supplementary Notes

Environmental Protection Agency, Water Pollution Control Research Series, report ~~number~~, 18050HLA09/73, September 1973. 537p

16. Abstract

This report is an extensive compilation of data on the effects of chemicals on aquatic life which were extracted from literature published during the period 1968-1972. It is an update of an earlier report entitled "Water Quality Criteria Data Book, Volume III, Effects of Chemicals on Aquatic Life" (Kemp, et al., 1971). The data are arranged alphabetically by chemical and are concisely represented in a columnar format which includes organism names, type of study, chemical effect, controlled parameters, significant comments on the test, and source of the data. The data were compiled using a program prepared as part of the work. ~~(Little-Battelle)~~ (EPA)

(See also W72-08157, W72-08158, W73-01976 and W73-03503)

17a. Descriptors *Toxicity, *Water pollution effects, Industrial wastes, Pesticides, Aquatic plants, Aquatic animals, Absorption, *Reviews, Marine fish, Freshwater fish, Chlorinated hydrocarbon pesticides, Carbamate pesticides, Phosphothioate pesticides, Organic acids, Antibiotics (pesticides), Heavy metals, Metals, Inorganic pesticides, Biochemical oxygen demand, Thiocarbamate pesticides, Triazine pesticides, Organophosphorus pesticides, Polychlorinated biphenyls, Surfactants, Nutrients, Urea pesticides, Organic compounds, Organic pesticides, Zooplankton, Phytoplankton, Aquatic algae, Marine algae, Water birds, Chlorophyta, Pyrrophyta, Cyanophyta, Chrysophyta, Crustaceans, Mollusks, Annelids, Aquatic insects, Benthic fauna, Protozoa, Invertebrates, Diatoms, Euglenophyta, Frogs, Marine animals, Newts, Toxins, Phenolic pesticides, Dyes, Chemicals, *Data collections, *Water quality standards, *Pollutant identification

17b. Identifiers

Anesthetics, Oil dispersants, Echinoderms, Macroinvertebrates. *Water quality data

17c. COWRR Field & Group 05C, ~~05B~~, 05A, 07C

Reproduced by NATIONAL TECHNICAL INFORMATION SERVICE U S Department of Commerce Springfield VA 22151

18. Availability Copy Available from GPO as EP1.6:18050 HLA 09/73, microfiche from NTIS as $1.45

19. Security Class. (Page)

21. No. of Pages 538

22. Price MF1.45

Send To: WATER RESOURCES SCIENTIFIC INFORMATION CENTER U.S. DEPARTMENT OF THE INTERIOR WASHINGTON, D.C. 20240

Abstractor Robert L. Little

Battelle's Columbus Laboratories, Columbus, Ohio

WRSIC 102 (REV. JUNE 1971)

* U. S. GOVERNMENT PRINTING OFFICE : 1974 720-125/511

WATER QUALITY CRITERIA DATA BOOK - VOL. 5
EFFECTS OF CHEMICALS ON AQUATIC LIFE
(Compilation From the Literature Dated 1968-1972)

by

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OFFICE OF RESEARCH AND DEVELOPMENT
U.S. Environmental Protection Agency
Washington, D.C. 20460

September 1973

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

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This report has been reviewed by the Office of Research and Development, EPA, and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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SECTION I

RECOMMENDATIONS

In a prior report (Water Quality Criteria Data Book, Volume III. Effects of Chemicals on Aquatic Life, Kemp, H. T., Abrams, J. P., Overbeck, R. C., EPA Contract No. 68-01-0007, Project No. 18050 GWV, 1971, 528 pp), several recommendations were presented. These are restated as follows with any appropriate comments.

(1) Establishment of a Chemical Pollution Effect Information Analysis Center. The Analytical Methodology Information Center (AMIC) sponsored by EPA at Battelle's Columbus Laboratories fills this need.

(2) Preparation of Listings of Chemical Constituents in Effluents by Cooperative Input From Industry. To the authors' knowledge this has not been done nor is there a current attempt to do so.

(3) Development of a Standard Pattern of Laboratory Evaluations for Estimating More Accurately the Effect of Chemicals on Aquatic Life. To the authors' knowledge no standard pattern of laboratory evaluations is widely accepted. Considerable progress has been made recently, however, in particular at the National Water Quality Laboratory (Duluth, Minnesota) and Virginia Polytechnic Institute. Significant efforts to compile bioassay information are in progress by Drs. Seba, Stephans, Tarzwell, and Weber, respectively, located at EPA establishments at Denver (Colo.), Duluth (Minn.), West Kingston (R.I.), and Cincinnati (Ohio). The classic report by McKee and Wolf (1963) is reportedly now being updated.

(4) Development of In Situ Field Bioassay Procedures for More Realistic Results Than Those Obtained in Laboratory Bioassays. Although increased publication of these types of data are apparent, there appears to be no large-scale trend in the published literature toward this approach.

(5) Improved Reporting Would Greatly Enhance the Utility of Chemical Effects Data and Allow More Precise Development of Multivariate Analysis and Mathematical Modeling. There is a large volume of literature on mathematical modeling, a significant amount of which is concerned with environmental pollution problems. For the most part, these models are not refined enough for practical utility in water pollution problems. Improved, more detailed data would assist greatly in verifying these models and enhancing their practical utility. The next few years will be crucial in this development.

SECTION II

INTRODUCTION

This report was prepared to update the document, "Water Quality Criteria Book, Volume 3", published in May, 1971 (Kemp, et al., 1971). This updated version primarily contains extracted information from original published data, but does not critically review bioassay procedures, factors affecting chemical toxicity, and other subject areas important in the study of water pollution by chemicals.

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SECTION III

PROCEDURE

The literature search technique primarily involved acquisition of documents cited in selected sections of annual reviews published in the Journal of the Water Pollution Control Federation, for the years 1968-1972. These listings were quite comprehensive, but were supplemented by additional documents identified in routine screening activities of the Analytical Methodology Information Center (AMIC), Battelle's Columbus Laboratories.

The data were prepared on punched paper tape so that the compilation could be prepared by computer. In addition, the format of the data is such that they can be loaded in the Analytical Methodology Information Center data base. Since index terms were added to each line of data, they can be remotely searched on an on-line real-time computer system located at Battelle's Columbus Laboratories. Persons interested in having access to this system should contact the AMIC Project Officer:

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As in the earlier document, extracted data are alphabetically arranged by chemical name (Appendix A). In all cases, chemical names and names (common or scientific) of organisms designated by the authors were used in this report. Nomenclature was not changed or corrected in any manner, that is, when the common name of a fish or a chemical was cited by an author, this and this alone was used. Therefore, in using these data compilations, care should be exercised by the reader to search chemical and biological synonomy. For example, in Appendix B, Species Index, data searches on bluegills (Page B-2) should include the scientific name, Lepomis macrochirus (page B-6) for completeness. Likewise trade names such as Sevin and Carbaryl should be searched for all data on this insecticide.

In the authors' judgment, the most significant toxicity levels in the aquatic studies are those for fish specifically designated 96-hr TL_m. These were usually selected but other values were included when these were not available. 96-hr TL_m is designated as T^4 to abbreviate this notation. T2 was used for 48-hr TL_m, and so on. When EC_{50}, LC_{50}, and LD_{50} were judged to be essentially equivalent to TL_m or TL_{50}, then the designation T was used to improve the consistency of data presentation. The authors acknowledge that this is not standard practice and that there may be important differences in these designations.

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Experimental conditions noted by authors in column six are denoted in lower case letters (see page A-1) with asterisks to indicate when conditions were controlled. In some cases, authors briefly referred to previous publications as a simple means of describing experimental conditions. No asterisks were included in these instances although some conditions were probably controlled. The letters in footnote 4 were augmented so that additional conditions could be indicated. These were light (q) (r) and (s).

Comments in general are brief, and it is recommended that interested readers consult the original document for more complete information.

The chemical nature of most industrial effluents is very complex and difficult to characterize. Although increased numbers of publications on this type of pollution problem are being published, there is no highly satisfactory technique to include these data in the tabular format used here. For these reasons, this document must be described as primarily containing data on the effect of single chemicals or simple mixtures of chemicals on aquatic life.

There was no attempt to extract data from the various reviews available since these rarely contained descriptive information concerning experimental conditions. Furthermore, only selective data are usually discussed. In the earlier report, more than 83 review papers were cited. To these can be added:

Becker, C. D., Thatcher, T. O., "Toxicity of Power Plant Chemicals to Aquatic Life", Battelle Memorial Institute, Pacific Northwest Laboratories, Richland, Washington, Report Nos. WASH-1249, UC-11, June 1973, 248 pp. AMIC-9135.

Boccardy, J. A., Spaulding, W. M., Jr., "Effects of Surface Mining on Fish and Wildlife in Appalachia", Bureau of Sport Fisheries and Wildlife, Publication No. 65, 1968. AMIC-6389.

Hunt, E. G., Keith, J. O., "Pesticide Analysis in Fish and Wildlife", Analytical Methods for Pesticides, Plant Growth Regulators, and Food Additives, Vol. 5, 1967, p 147. AMIC-5758.

Johnson, D. W., "Pesticides and Fishes - a Review of Selected Literature", Transactions of the American Fisheries Society, Vol. 97, 1968, pp 398-424. AMIC-5463.

Jones, A. N., Howells, W. R., "Recovery of the River Rheidol", Effluent Water Treatment Journal, Vol. 9, 1969, pp 605-610. AMIC-5752.

Seagran, H. L., "Mercury in Great Lakes Fish", Limnos, Vol. 3, No. 2, Summer 1970, pp 3-10. AMIC-153.

Sprague, J. B., "Measurement of Pollutant Toxicity to Fish. I. Bioassay Methods for Acute Toxicity", Water Research, Vol. 3, 1969, pp 793-821. AMIC-137.

Sprague, J. B., "Measurement of Pollutant Toxicity to Fish. II. Utilizing and Applying Bioassay Results", Water Research, Vol. 4, 1970, pp 3-32. AMIC-358.

Swabey, Y. H., "The Autopsy of Fish Collected in Fish Kills", The Ontario Water Resources Commission, Canada, Publication No. 11. 1966, 19 pp.

Not reviewed in this report are bioassay procedures, field assessment techniques, and related topics. A number of recent documents would be useful for this purpose, including:

Bell, M. C., "Fisheries Handbook of Engineering Requirements and Biological Criteria", Fisheries-Engineering Research Program, Corps of Engineers, North Pacific Div., Portland, Oregon, Contract No. DACW57-68-C-0086, 1973, 508 pp.

Cairns, J., Dickson, K. L., "Biological Methods for the Assessment of Water Quality", ASTM Special Technical Publication No. 528, 1973, 262 pp.

Dills, G. G., Rogers, D. T., "Aquatic Community Structure as an Indicator of Pollution", Geological Survey of Alabama, Circular 80, 1972, 25 pp.

Smith, L. S., Saddler, J. B., Cardwell, R. C., et al., "Responses of Teleost Fish to Environmental Stress", University of Washington, Fisheries Research Institute, Seattle, Washington, EPA Grant No. 18050EBK, 1971, 114 pp.

One report by McPhee and Ruelle (1969) was received too late to include in this compilation. In it are summarized toxicity data for 1888 chemicals against five fish species in a piscicide screening program.

It was previously suggested that ecological investigators be encouraged to include in their reports:

- Positive identity of chemicals under test
- Precise description of test organisms
- Use of standard test or field methods, where applicable, or of procedures if standard methods are not used
- Closer definition and control of test conditions

Although papers have generally improved in these regards, not all investigators include all desirable details of their experimentation.

A species index is included as Appendix B. Appendix C is a list of commercial chemicals cited in the data section (Appendix A) and includes, when available, the chemical nature of the compound.

SECTION IV

ACKNOWLEDGEMENTS

The authors wish to express their appreciation to the Project Officer, Mr. Robert Andrew, for his assistance and concern for this work.

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SECTION VI

APPENDICES

Abbreviations for Appendix A

Note: Names of chemicals and organisms are as given by the various authors. Readers should search for alternate, common, and/or scientific names of both chemical and aquatic species.

(1) Letters represent:
- B = bioassay, used in combination with S = static, CF = continuous flow, A = acute, and CH = chronic.
- L = laboratory bioassay.
- BOD = biochemical oxygen demand.
- F = field study, used in combination with R = river, stream, creek, etc., L = pond, M = marine, E = estuarine, and O = other (port facility, flooded area, etc.).

(2) Field location is indicated by abbreviation of the state or county.

(3) The number indicates ppm (mg/l), unless otherwise indicated by appropriate designations. The letters within parentheses following indicate T = TL_m, K = kill, SB = sublethal effects, NTE = no toxic effect. The number following these indicates the time in days (unless otherwise noted) at which observations were made. EC_{50}, LC_{50}, and similar designations for 50 percent lethality were all considered as TL_m and designated as such. The numbers within parentheses following these designations indicate the time in days when the effect was observed.

(4) The following indicate (when followed by an asterisk the variable was controlled):
- a = water temperature
- b = ambient air temperature
- c = pH
- d = alkalinity (total, phenolphthalein or caustic)
- e = dissolved oxygen
- f = hardness (total, carbonate, Mg, or CaO)
- g = turbidity
- h = oxidation-reduction potential
- i = chloride as Cl
- j = BOD, 5 day; (J) = BOD, short-term
- k = COD
- l = nitrogen (as NO_2 or NO_3)
- m = ammonia nitrogen as NH_3
- n = phosphate (total, ortho-, or poly)
- o = solids (total, fixed, volatile, or suspended)
- p = CO_2
- q = light
- r = flow rate
- s = sound

(5) Other miscellaneous abbreviations are:
- SM = sterilized media
- SSM = synthetic seawater medium
- NSW = natural seawater
- MSC = maximum safe concentration

The AMIC-xxxx number following each reference is the accession number which was assigned by the Analytical Methodology Information Center to facilitate location of original documents.

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
ABS	Brachydanio rerio	BSA	--	32 (S84)	s,o, and synthetic dilution water	Feeding behavior was affected by zinc, chromium, and ABS in that more time was required for consuming measured amounts of food. Feeding response was also affected by aeration, feeding schedule, light intensity, and outside disturbances. The authors note that much more work is needed to establish the reliability of this procedure.	Cairns, et al (1967), AMIC-5787
ABS	Lepomis macrochirus	BSA, L	--	17.4 (T4)	s*,o, and synthetic dilution water	This study was conducted to determine the relative toxicities of 28 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5728
ABS	Nitzschia linearis	BSA, L	--	10 (T5)	s*,o, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5728
ABS	Physa heterostropha	BSA, L	--	34.2 (T4)	s*,o, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5728
Acetaldehyde	Lepomis macrochirus	BSA, L	--	53 (T4)	s*,o, and synthetic dilution water	This study was conducted to determine the relative toxicities of 28 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5728
Acetaldehyde	Nitzschia linearis	BSA, L	--	236.6 (T5)	s*,o, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5728
Acetaldehyde	Crangon crangon	BSA	--	greater than 188 (T2)	as(continuous, aeration, sea-	same as above	Portmann, et al(1971), AMIC-7781

					water, and daily solution renewal)		
Acetic acid	Lepomis macrochirus	BSA, L	--	75 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5728
Acetic acid	Nitzschia linearis	BSA, L	--	74 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5728
Acetic acid	Carcinus maenas	BSA	--	100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Acetic acid	Crangon crangon	BSA	--	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Acetone	Rasbora heteromorpha	BCFA and BSA	--	4,000 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						found to be essential.	
Acetone	Lepomis macrochirus	BSA, L	--	8,388 (T4)	sp,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 25 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 18-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Acetone	Nitzschia linearis	BSA, L	--	11,493 (T5)	sp,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Acetone	Mercenaria mercenaria (eggs)	L	--	greater than 188.8 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Acetone	Mercenaria mercenaria (larvae)	L	--	greater than 188.8 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
Acetone	Crassostrea virginica (eggs)	L	--	greater than 188.8 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
Acetone	Pharaidium ambiguum	L	--	8.5-18.8 (MTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of nat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone.	Otto (1978), AMIC-852

						Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Acriflavine (neutral)	Morone saxatilis (fingerlings)	BSA	--	16.4 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Cutrine, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), ANIC-9571
Acriflavine	Trachinotus carolinus (juvenile)	BSA	--	114-118 (T4)	a,c,e,f,i, and sulfate, sodium, calcium, potassium, magnesium, carbonate, bicarbonate, salinity	In this study of seawater salinity was controlled at 18, 28, and 38 ppt and investigated as a variable. Acriflavin, formalin, and potassium permanganate were slightly more toxic at the highest salinity, while copper sulfate was slightly less toxic. These compounds are used as prophylactic bacterial treatments. All appeared to be reasonably safe to use except possibly potassium permanganate.	Birdsong, et al (1971), ANIC-9579
Acrolein	Rasbora heteromorpha	BCFA and BSA	--	0.86 (T2)	sw,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-5429
Acrylonitrile	Crangon crangon	BSA	--	18-33 (T1)	aa(continuous aeration, seawater, and daily	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine	Portmann, et al (1971), ANIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					solution renewal)	organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Actusol	Steelhead trout (fingerlings)	BSA	--	24.8 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al(1969), AMIC-3834
Actusol	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	48.8 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Actusol	Pacific oyster (larvae)	BSA	--	28.8-48.8 (S)	--	same as above	Tracy, et al(1969), AMIC-3834
Aflatoxin B1	Brachydanio rerio (eggs)	--	--	1.8 (K)	s*	This fungal toxin was acutely toxic to Brachydanio rerio embryos and larvae, especially the latter. The authors suggest this response as an easily performed assay for aflatoxin.	Abedi,et al (1968), AMIC-3712
Agridio	Rasbora heteromorpha	BCFA and BSA	--	1.9 (T2)	s*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969),AMIC-5429
Aldrin (C-14 labelled)	Daphnia magna (adult)	BCF	--	2.4 (residue)	s*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly. Biological magnification factors of 2988 to 114,188 depending on the species were found for DDT, and 22,888 to 141,888 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish	Johnson,et al (1971), AMIC-3828

						food chain.	
Aldrin (C-14 labelled)	Hexagenia bilineata (nymph)	BCF	--	0.7 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3829
Aldrin (C-14 labelled)	Chironomus sp. (larva)	BCF	--	0.5 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3829
Aldrin (C-14 labelled)	Daphnia magna (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3829
Aldrin (C-14 labelled)	Hexagenia bilineata (nymph)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3829
Aldrin (C-14 labelled)	Chironomus sp. (larva)	BCF	--	0.0001(SB3)	a*	same as above	Johnson, et al (1971), AMIC-3829
Aldrin	Fish (not specified)	--	--	greater than 0.001-0.01 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971), AMIC-1896
Aldrin	Ictalurus punctatus	FRLO	Iowa	0.91 (accumulation, SB)	--	Edible flesh of fish collected from rivers, lakes, ponds, and reservoirs was analyzed. Fish taken in areas receiving agricultural runoff showed highest accumulation, especially in bottom feeding fish.	Harris, et al (1971), AMIC-1492
Aldrin	Wolffia papulifera	L	--	1000 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
Aldrin	Anacystis nidulans	L	--	MTE	a*,c*,r SM	Metabolic products of Aldrin, Dieldrin, and Endrin can be as toxic as the parent compounds, as shown by OD measurement.	Batterton, et al (1971), AMIC-1471
Aldrin	Ageanellum quadruplicatum	L	--	MTE	a*,c*,r SM	same as above	Batterton, et al (1971), AMIC-1471
Aldrin	Channa punctata	BSA	--	0.000166 (K 2 hr)	a*,c	Aldrin was shown to be more toxic than DDT, BHC, dieldrin, and lindane. Behavioral responses prior to death were recorded in some detail.	Mathur (1969), AMIC-5422
Aldrin	Channa punctata	BSA	--	0.000333 (K 30 min)	a*,c	same as above	Mathur (1969), AMIC-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							5422
Aldrin	Puntius sophore	BSA	--	0.000166 (K 1.5 hr)	s*,c	same as above	Mathur (1969),AMIC-5422
Aldrin	Puntius sophore	BSA	--	0.000333 (K 30 min)	s*,c	same as above	Mathur (1969),AMIC-5422
Aldrin	Chlamydotheca arcuata	BSCH and A	--	0.00001-0.001 (120-1700 ppb residue 64 wk)	--	The organisms were exposed to 0.01 and 0.1 ppb of the toxicants for 25 weeks/ after which time the amounts added each week were increased ten-fold over the initial amounts. Ulothrix occurred spontaneously in the test tanks. The results show that chronic accumulations in Chlamydotheca exceeded levels which were toxic in acute tests. Residues in Chlamydotheca ranged from 12,000 to 260,000 times greater than the theoretical concentrations in the water; those in Ulothrix were 235-3,000 times exposure levels.	Kawatski, et al (1971), AMIC-5506
Aldrin	Chlamydotheca arcuata	BSCH and A	--	0.0015 (T1)	--	same as above	Kawatski, et al (1971),AMIC-5506
Aldrin	Ulothrix sp.	BSCH	--	0.00001-0.001 (120-1700 ppb residue 33-48 wk)	--	same as above	Kawatski, et al (1971), AMIC-5506
Aldrin	Tubifex tubifex	FL and BSA	Belzoni, Miss.	3.0 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969),AMIC-5979

Aldrin	Mercenaria mercenaria (eggs)	L	--	greater than 10.0 (TI)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-9998
Aldrin	Mercenaria mercenaria (larvae)	L	--	0.41 (T 12)	--	same as above	Davis, et al (1969), AMIC-9998
Algistat	Cyprinus carpio	L	--	0.66 (K)	--	The results are described as preliminary and the authors state that further testing should be conducted before Algistat is used in hatcheries and rearing ponds.	Pal, et al (1968), AMIC-9794
Algistat	Spirogyra	L	--	0.8 (K)	--	same as above	Pal, et al (1968), AMIC-9794
Algistat	Oscillatoria	L	--	0.66 (K)	--	same as above	Pal, et al (1968), AMIC-9794
Algistat	Anabaena	L	--	0.66 (K)	--	same as above	Pal, et al (1968), AMIC-9794
Algistat	Microcystis	L	--	0.66 (K)	--	same as above	Pal, et al (1968), AMIC-9794
Algistat	Euglena	L	--	1.0 (NTE)	--	same as above	Pal, et al (1968), AMIC-9794
Alkyl dimethyl benzylammonium chloride	Phormidium ambiguum	L	--	8.9-10.8 (33percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to	Otto (1978), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Allidene diacetate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	same as above	Otto(1978), AMIC-892
Allyl alcohol	Mercenaria mercenaria (eggs)	L	--	1.03 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Allyl alcohol	Mercenaria mercenaria (larvae)	L	--	less than 0.25 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
Allyl alcohol	Asterias rubens	BSA	--	10-33 (T2)	am(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Allyl alcohol	Cardium edule	BSA	--	greater than 100 (T2)	am(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Allyl alcohol	Crangon	BSA	--	greater than	am(contin-	same as above	Portmann, et

	crangon			100 (T2)	uous aeration, seawater, and daily solution renewal)		al (1971), AMIC-7701
alpha-amino-2,6-dichlorobenzaldoxine HCl	Rasbora heteromorpha	BCFA and BSA	--	190 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
alpha-amino-2,6 dichlorobenzaldoxine	Rasbora heteromorpha	BCFA and BSA	--	440 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Aluminum	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	25 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FN	Catalina Island, Cal.	8 (dorsal muscle residue)	--	same as above	Stapleton (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-5988
Aluminum	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles,Cal.	25 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FN	Catalina Island, Cal.	8 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles,Cal.	28 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FN	Catalina Island, Cal.	38 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus (gravid females)	FN	Catalina Island, Cal.	22 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles,Cal.	26 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FN	Catalina Island, Cal.	25 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles,Cal.	69 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FN	Catalina Island, Cal.	23 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FN	Scattergood Steam Plant, Los	16 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988

			Angeles,Cal.			
Aluminum	Paralabrax clathratus	FW	Catalina Island, Cal.	4 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles,Cal.	33 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Aluminum	Paralabrax clathratus	FW	Catalina Island, Cal.	34 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Aminotriazole	Fish (not specified)	--	--	greater than 1000 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971),AMIC-1056
Amitrol-T	Crassostrea virginica (eggs)	L	--	greater than 10 (T2)	--	The effect of 42 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al(1969), AMIC-5998
Amitrol-T	Crassostrea virginica (larvae)	L	--	greater than 10(T14)	--	same as above	Davis, et al (1969), AMIC-5998
Amitrol-T	Gammarus fasciatus	BSA	--	greater than 100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970),AMIC 453
Amitrol-T	Palaemonetes kadiakensis	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Amitrol-T	Asellus brevicaudus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Amitrol-T	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Amitrol-T	Daphnia magna	BSA	--	38.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Amitrol-T	Cypridopsis vidua	BSA	--	32.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Amitrol-T	Lepomis macrochirus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Amitrol	Crassostrea virginica (eggs)	L	--	733.7 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Amitrol	Crassostrea virginica (larvae)	L	--	295.4 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
Arsenic (plus phenol and zinc)	Salmo gairdneri	BSA	--	0.9-2.54 (T2)	a,c*,d,e*, f,g	Rainbow trout were exposed to concentrations of fluctuating levels of arsenic, phenol, and zinc and to constant mixtures of the three. Tests with fluctuating levels of toxicants showed that LC50 values were similar to those for constant concentrations as long as the periodicity of the fluctuation did not exceed the resistance time for the poison. Except when zinc predominated in the mixtures, the fractional toxicities could be summed to give the toxicity of the mixture.	Brown, et al (1969), AMIC-5993

Arsenic	Salmo gairdneri	BSA	--	22.9-67.5 (fluctuating conc. T 378-greaterthan 788 min)	a,c*,d,e*, f,n	same as above	Brown, et al (1969), AMIC-9993
Arsenic	Salmo gairdneri	BSA	--	49.8 (T greater than 788 min)	a,c*,d,e*, f,n	same as above	Brown, et al (1969), AMIC-9993
Ammonium carbonate plus Copper sulfate	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of nat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1970), AMIC-892
Ammonium chloride plus Copper sulfate (1:2)	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otte (1970), AMIC-892
Ammonium hydroxide (as NH_3)	Phormidium ambiguus	L	--	8.5-18.0(MTE)	--		Otte (1970), AMIC-892
Ammonium sulfamate	Mysbera heteroscapha	BCFA and BSA	--	1,188 (T1, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-9429
Ammonium sulfamate	Mysbera heteroscapha	BCFA and BSA	--	788 (T1, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-9429
Ammonium sulfamate	Mysbera	BCFA	--	3,288 (T1, pH	a*,c,e,f,	same as above	Alabaster

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	Heteroscorpa	and BSA		5.7)	hard (HW) or soft (SW) synthetic dilution water, or seawater for some species		(1969), AMIC-9429
Ammonium sulfonate	Rechora heteroscorpa	BCFA and BSA	--	518 (T1, pH 7.1)	a°,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-9429
Ammonium sulfonate	Rechora heteroscorpa	BCFA and BSA	--	99 (T1,pH 8.8)	a°,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-9429
Ammonium (as NH3)	Lepomis macrochirus	BSA, L	--	3.4 (T4)	ab,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-9720
Ammonium (as NH3)	Nitzschia linearis	BSA, L	--	420 (T89)	ab,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-9720

Aesenius (as HNT)	Physa heterostropha	BSA, L	--	98.8 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-9720
Aesthenone B	Lymnaea stagnalis (adults)	L	--	18.8 (S87)	a*,e	This compound markedly reduced egg viability, production, and laying frequency of this basommatophoran snail. Oogenesis and spermatogenesis appeared to be retarded. The authors conclude that aesthenone B can be regarded as an effective molluscicide for Lymnaea stagnalis.	Baer, et al (1967), AMIC-9648
Antimony	Coregonus clupeaformis	FL	Moose Lake, Can.	0.002 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et al (1971), AMIC-3819
Antimony	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.003 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Antimony	Esox lucius	FL	Moose Lake, Can.	0.003 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Antimony	Esox lucius	FL	Lake St. Pierre, Can.	0.004 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Antimony	Esox lucius	FL	Lake Erie, Can.	0.004 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Antimony	Osmerus mordax	FL	Lake Erie, Can.	0.004 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Antimony	Perca flavescens	FL	Lake Erie, Can.	0.003 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Antimycin A	Lepisosteus platostomus	BSA, FD	--	0.00048 (T4)	a,c,e,f,g, deionized water	Liquid and sand formulations of antimycin A were tested as a fish toxicant in lab waters of various temperature, hardness, pH, and turbidity against 31 species of freshwater fish of various sizes and life stages. Each formulation of toxicant was lethal under all water conditions to fish eggs, fry, fingerlings, and adult fish. Trout were the most sensitive and catfishes the least sensitive. Of the 31 species, 24	Berger, et al (1969), AMIC-9499

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						succumbed to 0.005 ppm or less of the toxicant; only certain catfishes survived 0.025 ppm.	
Antimycin A	Amia calva	BSA, FD	--	0.015 (68 percent K4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Salmo gairdneri	BSA, FD	--	0.00003-0.00006 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Salmo trutta	BSA, FD	--	0.005 (K3)	a,c,e,f,g, deionized water	same as above	Berger,et al (1969), AMIC-5495
Antimycin A	Salvelinus fontinalis	BSA, FD	--	0.00003-0.00006 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Salvelinus namaycush	BSA, FD	--	0.00007 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Esox lucius	BSA, FD	--	0.00011-0.00055 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Carassius auratus	BSA, FD	--	0.00020-0.001 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), AMIC-5495
Antimycin A	Chrosomus eos	BSA,	--	0.00009-0.00052	a,c,e,f,g,	same as above	Berger, et

Antimycin A	Lepomis gibbosus	BSA, FO	--	0.00009-0.00024 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), ANIC-5495
Antimycin A	Lepomis macrochirus	BSA, FO	--	0.00006-0.0009 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), ANIC-5495
Antimycin A	Lepomis megalotis	BSA, FO	--	0.00006 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), ANIC-5495
Antimycin A	Lepomis microlophus	BSA, FO	--	0.00009 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), ANIC-5495
Antimycin A	Micropterus dolomieui	BSA, FO	--	0.00004-0.00006 (T4)	a,c,e,f,g, dilution water	same as above	Berger, et al (1969), ANIC-5495
Antimycin A	Micropterus salmoides	BSA, FO	--	0.00009-0.00014 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), ANIC-5495
Antimycin A	Ponoxis nigro-maculatus	BSA, FO	--	0.001-(43 percent K)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), ANIC-5495
Antimycin A	Perca flavescens	BSA, FO	--	0.00003-0.00012 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), ANIC-5495
Antimycin A	Stizostedion vitreum	BSA, FO	--	0.00002-0.00004 (T4)	a,c,e,f,g, dilution water	same as above	Berger, et al (1969), ANIC-5495
Antimycin A	Apledinotus grunniens	BSA, FO	--	0.00002-0.00014 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), ANIC-5495
Antimycin A	Cyprinus carpio	BSA, FO	--	0.00012-0.00043 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969), ANIC-5495

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Antimycin A	Pimephales promelas	BSA, FO	--	0.00006-0.00020 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969). AMIC-5495
Antimycin A	Carassius carpinus	BSA, FO	--	0.003 (K)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969). AMIC-5495
Antimycin A	Catostomus commersoni	BSA, FO	--	0.005 (K4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969). AMIC-5495
Antimycin A	Ictiobus cyprinellus	BSA, FO	--	0.005 (K4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969). AMIC-5495
Antimycin A	Minytrema melanops	BSA, FO	--	0.002 (K)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969). AMIC-5495
Antimycin A	Ictalurus catus	BSA, FO	--	0.2 (K4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969). AMIC-5495
Antimycin A	Ictalurus melas	BSA, FO	--	0.021-0.088 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969). AMIC-5495
Antimycin A	Ictalurus punctatus	BSA, FO	--	0.0052-0.0165 (T4)	a,c,e,f,g, dilution water	same as above	Berger, et al (1969). AMIC-5495
Antimycin A	Pilodictis olivaris	BSA, FO	--	0.2 (K4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969). AMIC-5495
Antimycin A	Eucalia inconstans	BSA, FO	--	0.00004-0.00055 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969). AMIC-5495
Antimycin A	Lepomis cyanellus	BSA, FO	--	0.00011-0.0005 (T4)	a,c,e,f,g, deionized water	same as above	Berger, et al (1969). AMIC-5495

		FB		(T4)	deionized water		et (1969), ANIC-5499
Antimycin A	Salmo gairdneri	L	--	0.00003 (T4)	a*	The piscicides Antimycin A and Rotenone were found to be compatible when mixed and furthermore appeared to have an additive effect in combination. That is both compounds were more toxic in the presence of the other than alone.	Howland (1969), ANIC-5729
Antimycin A	Lepomis macrochirus	L	--	0.00016 (T4)	a*	same as above	Howland (1969), ANIC-5729
Antimycin A	Salmo clarki	FL	Copper Lake, Idaho	0.005 (K)	a,c,d,e	Rapid fish kill occurred in a oligotrophic situation and toxicity persisted for at least 18 days following application. Plankton was also reduced. Later the lake was successfully stocked with cutthroat trout. The rapidity of kill and persistence indicated that the Antimycin concentration was higher than necessary. The authors recommended further research.	Rabe, et al (1969), ANIC-5732
Antimycin A	Salmo gairdneri	BSA	--	0.00005 (T4)	a*	The dyes Rhodamine B and Fluorescein sodium were found to be relatively non-toxic in ppm concentrations while antimycin was toxic at ppb levels. The author states that neither dye at field use concentrations should significantly influence the activity of Antimycin A against fish.	Marking (1969), ANIC-5729
Antimycin A	Ictalurus punctatus	BSA	--	0.0147 (T4)	a*	same as above	Marking (1969), ANIC-5729
Antimycin A	Lepomis macrochirus	BSA	--	0.00014 (T4)	a*	same as above	Marking (1969), ANIC-5729
Aphitex	Rasbora heteromorpha	DCFA and BSA	--	27 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes	Alabaster (1969), ANIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					species	pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Aquaclene 188	Pimephales promelas	BSA	--	29.8 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are given as "most probable" 96-hr TL sub e.	Zillich (1969), AMIC-2989
Aquaclene 188	Pimephales promelas	BSA	--	4.2 (MSC)	c,d,e,f	same as above	Zillich (1969), AMIC-2989
Aquaclene 188	Biochemical oxygen demand	L	--	848,88	c,d,e,f	same as above	Zillich (1969), AMIC-2989
Aquaclene	Cardium edule	BSA	--	33-188 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Aquaclene	Crangon crangon	BSA	--	188-338 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aquathol	Morone saxatilis (fingerlings)	BSA	--	718 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Cesaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1972), AMIC-5571

AQ	Morone virens	BSA	--	0.00011-0.00044 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.81 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DD, CI, OD, AQ, PC, RM, TM, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1978), AMIC-445
AQ	Fundulus heteroclitus	BSA	--	0.00032-0.00035 (T4)	a*,c,e,and synthetic seawater	same as above	LaRoche, et al (1978), AMIC-445
Arkalina DDT	Rasbora heteromorpha	BCFA and BSA	--	0.17 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater forsome species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969),AMIC-5429
Aroclor 1221 (plus Corexit 7664)	Salmo salar (parr)	L	--	4 (< 5 hr)	a*,e (mixed tap or seawater)	Aroclors 1254 and 1221 were evaluated for toxic effect with Corexit 7664 (weight ratio 1:19) as an emulsifying agent. Since only two fish were used for each exposure, the author notes that the results are only preliminary. However, PCB"s appeared to be less toxic to Atlantic salmon parr than chlorinated hydrocarbon pesticides.	Zitko (1978), AMIC-23
Aroclor 1242	Agonus cataphractus	BSA	--	greater than 10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Aroclor 1242	Crangon crangon	BSA	--	1.8 (T2)	as(continuous aeration, seawater, and daily	same as above	Portmann, et al (1971), AMIC-7781

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					solution renewal)		
Aroclor 1248	Agonus cataphractus	BSA	--	greater than 18 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
Aroclor 1248	Cardium edule	BSA	--	greater than 18 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
Aroclor 1248	Crangon crangon	BSA	--	0.83-1.8 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
Aroclor 1254 (plus Corexit 7664)	Salmo salar (parr)	L	--	4 (K 96 hr)	as(mixed tap or seawater)	Aroclors 1254 and 1221 were evaluated for toxic effect with Corexit 7664 (weight ratio 1:19) as an emulsifying agent. Since only two fish were used for each exposure, the author notes that the results are only preliminary. However, PCB's appeared to be less toxic to Atlantic salmon parr than chlorinated hydrocarbon pesticides.	Zitko (1970), ANIC-23
Aroclor 1254 (with corexit 7664, colloidal solution)	Gammarus oceanicus	BSA	--	0.001-0.01 (threshold concentration)	as(weekly solution change, seawater)	Aroclor 1254 solutions or suspensions with Corexit 7664 at varied concentrations in seawater resulted in varying toxicity of the Aroclor. Corexit was not lethal at 1000 ppm but caused	Wildish (1970), ANIC-69

						subiethal branchial edema at concentrations down to 0.19 ppm. The author notes a possible synergistic effect between the two compounds.	
Aroclor 1254 (with corexit 7664, emulsion)	Gammarus oceanicus	BSA --	0.01-0.10(threshold concentration)	s* (weekly solution change, seawater)	same as above		Wildish (1978), AMIC-69
Aroclor 1254	Lagodon rhomboides (juvenile)	BCFCH --	0.005 (K 14-15)	s, salinity	Exposure of spot and pinfish to this PCB increased susceptibility to disease as well as being toxic at .005 ppm. The compound was rapidly stored in tissues, persisting for approximately 3 mo. The authors recommended further chronic exposure studies.		Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH --	0.005 (K 14-15)	s, salinity	same as above		Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH --	0.001 (SB56)	s, salinity	same as above		Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH --	0.001 (8.3 ppm brain residue 56 d)	s, salinity	same as above		Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH --	0.001 (46 ppm gills residue 56 d)	s, salinity	same as above		Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH --	0.001 (13 ppm heart residue 56 d)	s, salinity	same as above		Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH --	0.001 (83 ppm liver residue 56 d)	s, salinity	same as above		Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH --	0.001 (65 ppm muscle residue 56 d)	s, salinity	same as above		Hansen, et al (1971), AMIC-1811
Aroclor 1254	Leiostomus xanthurus	BCFCH --	0.001 (27 ppm whole body residue 56 d)	s, salinity	same as above		Hansen, et al (1971), AMIC-1811
Aroclor 1254	Penaeus duorarum	L -- (ACF)	1.0 ppb(K15, juvenile)	s*	In addition to mortality, Aroclor accumulation in shrimp		Nimmo, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(juvenile)					hepatopancreas was marked (up to 518 PPM). The biological half-life for this chemical was found to be 17 days with tissue distribution in the shrimp being similar to that of DDT. Delayed mortality with no prior poisoning symptoms was also observed. Considerable additional data are presented.	AMIC-2645
Aroclor 1254	Agonus cataphractus	BSA	--	greater than 10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Aroclor 1254	Cardium edule	BSA	--	greater than 10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1254	Crangon crangon	BSA	--	3-10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1254	Paralichthys sp.	FM	Escambia Bay, Fla.	4.5-184 (residue)	--	Residue analysis of dead and dying animals led to the source of the PCB which was an accidental leakage from an industrial plant. The concentrations of the PCB in water and sediment were less than 0.03-486 and less than 0.881 ppm, respectively. Bioassays showed juvenile shrimp to be the most susceptible species, but inhibition of shell growth of oysters was the most sensitive parameter studied. Continued surveillance and long-term testing at sublethal concentrations were pointed out as urgently needed.	Duke, et al (1970), AMIC-720

Aroclor 1254	Lagodon rhomboides (juvenile)	BSA	--		17 (residue)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1254	Penaeus duorarum (juvenile)	BSA	--		3.9 (residue)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1254	Crassostrea virginica	BSA	--		0.1 (584)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Penaeus duorarum (juvenile)	BCHCF	--		0.005 (72 percent KZ0)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Penaeus duorarum (juvenile)	BCHCF	--		0 (residue)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1254	Callinectes sapidus (juvenile)	BCHCF	--		0.005 (5percent KZ0)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Callinectes sapidus (juvenile)	BCHCF	--		23 (residue)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1254	Microgobon undulatus	FM	Escambia Bay, Fla.		12 (residue)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Brevoortia patronus	FM	Escambia Bay, Fla.		5.7-11(residue)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Lagodon rhomboides	FM	Escambia Bay, Fla.		10 (residue)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Cynoscion nebulosus	FM	Escambia Bay, Fla.		7.5-20(residue)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Penaeus setiferus	FM	Escambia Bay, Fla.		1.5-2.5 (residue)	--	same as above	Duke, et al (1970),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-720
Aroclor 1254	Callinectes sapidus	FM	Escambia Bay, Fla.	1.0-7.0 (residue)	--	same as above	Duke, et al (1970), AMIC-720
Aroclor 1254	Lagodon rhomboides (juvenile)	BSA	--	0.1 (MTE)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1254	Penaeus duorarum (juvenile)	BSA	--	0.01 (EZ)	--	same as above	Duke, et AL(1970), AMIC-720
Aroclor 1260	Agonus cataphractus	BSA	--	less than 10 (TZ)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Aroclor 1260	Cardium edule	BSA	--	less than 10 (TZ)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1260	Crangon crangon	BSA	--	less than 10 (TZ)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Aroclor 1262	Agonus cataphractus	BSA	--	less than 10 (TZ)	as(continuous aeration, seawater, and	same as above	Portmann, et al (1971), AMIC-7701

					daily solution renewal)		
Aroclor 1262	Cardius edule	BSA	--	less than 10 (72)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Aroclor 1262	Crangon crangon	BSA	--	less than 10 (72)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Arsenic	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.823(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.86 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.881 ppb.	Lucas, et al (1978), AMIC-3778
Arsenic	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	0.869(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	0.814(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.863(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Prosopium cylindraceum	FL	Great Lakes - Superior,	0.8856(residue)	--	same as above	Lucas, et al (1978),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Michigan, and Erie				AMIC-3778
Arsenic	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	0.049(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	0.028(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Coregonus auratus	FL	Great Lakes - Superior, Michigan, and Erie	0.006(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Hetrepis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	0.0035(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	0.025(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	0.098(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	0.007(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	0.098(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Arsenic	Coregonus clupeaformis	FL	Moose Lake, Can.	0.09 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized	Uthe, et al (1971), AMIC-3819

						areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	
Arsenic	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.7 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Arsenic	Esox lucius	FL	Moose Lake, Can.	0.85 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Arsenic	Esox lucius	FL	Lake St. Pierre, Can.	0.89 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Arsenic	Esox lucius	FL	Lake Erie, Can.	0.85 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Arsenic	Osmerus mordax	FL	Lake Erie, Can.	0.15 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Arsenic	Perca flavescens	FL	Lake Erie, Can.	0.85 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Aquium (K salt)	Rasbora heteromorpha	BCFA and BSA	--	5,268 (TI, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster(1969), AMIC-5425
Aquium (K salt)	Rasbora heteromorpha	BCFA and BSA	--	1,788 (TI, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater	same as above	Alabaster(1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					for some species		
Asuntol (sheep dip)	Rasbora heteromorpha	BCFA and BSA	--	0.046 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969), AMIC-5425
Atlas 1981	Cardium edule	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Atlas 1981	Crangon crangon	BSA	--	100-330 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Atlas 1981	Pandalus montagui	BSA	--	33-100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Atlavar	Rasbora heteromorpha	BCFA and BSA	--	1,300 (T2)	a*,c,e,f, hard (HW) or soft (SW) syn-	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders	Alabaster (1969), AMIC-5425

					thetic dilution water, or seawater for some species	of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Atrazine	Carcinus maenas	BSA	—	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Atrazine	Cardium edule	BSA	—	greater than 100 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Atrazine	Crangon crangon	BSA	—	10-33 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Avadex BW	Rasbora heteromorpha	BCFA and BSA	—	6 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Avadex	Rasbora heteromorpha	BCFA and BSA	--	0.2 (T2)	a*,c,e,f, hard (HW) or soft (SW)synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), ANIC-5425
Azinphosmethyl	Fish (not specified)	--	--	greater than 0.01-0.1 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas(1971) ANIC-1896
Azinphosmethyl	Carcinus maenas	BSA	--	0.033-0.1 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), ANIC-7781
Azinphosmethyl	Cardium edule	BSA	--	greater than 10 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
Azinphosmethyl	Crangon crangon	BSA	--	0.0003-0.001 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
Azinphosmethyl	Limanda	BSA	--	0.01-0.03 (T2)	a*(contin-	same as above	Portmann, et

	Ilsanda				uous aeration, seawater, and daily solution renewal)		al (1971), AMIC-7781
Azinphosmethyl	Pandalus montagui	BSA	--	0.0003-0.001 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Azinphos methyl	Rasbora heteromorpha	BCFA and BSA	--	0.076 (T2)	a*,c,e,f, hard (HW) orsoft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-9429
Bacterial endotoxins	Salmo gairdneri (400-500 g)	L	--	18 (NTE)	--	Salmon and trout were injected with endotoxins prepared from Escherichia coli and Aeromonas salmonicida. No significant cardiovascular response or effect on liver tryptophan pyrrolase activity in vitro occurred. It was concluded that metabolic effects of bacterial endotoxins in salmonids are qualitatively different from those of higher vertebrates.	Wedemeyer, et al (1968), AMIC-3774
Bacterial endotoxins	Oncorhynchus kisutch (400-500 g)	L	--	18 (NTE)	--	same as above	Wedemeyer, et al (1968), AMIC-3774
Baton	Gammarus fasciatus	BSA	--	1.1 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals	Sanders (1970), AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						represent important food chain links.	
Banner DG81	Crangon crangon	BSA	--	18-33 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Banner DG82	Crangon crangon	BSA	--	18 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Banner DG83	Crangon crangon	BSA	--	18-33 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Banner DG84	Crangon crangon	BSA	--	18-33 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Berban	Rasbora heteromorpha	SCFA and BSA	--	0.91 (T2)	a°,c,e,f, hard (HW) or SOFT(SW) synthetic dilution	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a	Alabaster (1969), AMIC-9425

					water, or seawater for some species	formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Barium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	2 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
Barium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.7 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Barium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.4 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Barium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.3 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Barium	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	2.8 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Barium	Paralabrax clathratus	FM	Catalina Island, Cal.	2.6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Barium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	2.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Berlux	Paralabrax clathratus	FN	Scattergood Steam Plant, LosAngeles, Cal.	1.4 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Berlux	Paralabrax clathratus	FN	Catalina Island, Cal.	1.6 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Berlux	Paralabrax clathratus	FN	Scattergood Steam Plant, LosAngeles, Cal.	2.6 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Berlux	Paralabrax clathratus	FN	Catalina Island, Cal.	1.6 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Berlux	Paralabrax clathratus	FN	Scattergood Steam Plant, LosAngeles, Cal.	1.2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Berlux	Paralabrax clathratus	FN	Catalina Island, Cal.	2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Berlux	Paralabrax clathratus	FN	Scattergood Steam Plant, LosAngeles, Cal.	5.6 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Berlux	Paralabrax clathratus	FN	Catalina Island, Cal.	9.1 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Bocel AD6	Crangon crangon	BSA	--	18-33 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781

Basol 99	Rasbora heteromorpha	BCFA and BSA	--	42 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Basol 99	Rasbora heteromorpha	BCFA and BSA	--	32 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Bayer 39007	Rasbora heteromorpha	BCFA and BSA	--	14 (T2, hardwater)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Bayer 39007	Rasbora heteromorpha	BCFA and BSA	--	7.5 (T2, softwater)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Bayluscide	Morone saxatilis (fingerlings)	BSA	--	0.78 (T3)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate.	Wellborn (1971), AMIC-5571

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	
Baytex	Orconectes nais	FP	Pratt, Kansas	0.1 (K4)	a,b,c,d,e, f,g,p	Baytex applied at various rates up to 750 ppb resulted in significant reduction of crayfish. Ponds treated at less than 100 ppb had to be retreated to eradicate crayfish. This chemical appears to have utility in fish culture for controlling crayfish.	Ray, et al (1979), AMIC-9433
Baytex	Procambarus simulans	FP	Pratt, Kansas	0.1 (K4)	a,b,c,d,e, f,g,p	same as above	Ray, etal (1978), AMIC-9433
Baytex	Channel catfish	FP	Pratt, Kansas	0.1 (NTE4)	a,b,c,d,e, f,g,p	same as above	Ray, et al(1978), AMIC-9433
Baytex	Roccus saxatilis	FP	Pratt, Kansas	0.1 (NTE4)	a,b,c,d,e, f,g,p	same as above	Ray, et al(1978), AMIC-9433
Baytex	Dragonflies (larvae)	FP	Pratt, Kansas	0.1 (K4)	a,b,c,d,e, f,g,p	same as above	Ray, et al(1978), AMIC-9433
Baytex	Whirligig beetles	FP	Pratt, Kansas	0.1 (K4)	a,b,c,d,e, f,g,p	same as above	Ray, et al(1978), AMIC-9433
Baytex	Backswimmers	FP	Pratt, Kansas	0.1 (K4)	a,b,c,d,e, f,g,p	same as above	Ray, et al (1978),AMIC-9433
Baytex	Ictalurus punctatus	BSA	--	1.68 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or	Macek,et al (1978), AMIC-9518

						centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish n bioassays was discouraged.	
Baytex	Ictalurus melas	BSA	--	1.62 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Carassius auratus	BSA	--	3.40 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Cyprinus carpio	BSA	--	1.16 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Pimephales promelas	BSA	--	2.44 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Lepomis macrochirus	BSA	--	1.38 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Lepomis microlophus	BSA	--	1.88 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Micropterus salmoides	BSA	--	1.54 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Salmo gairdneri	BSA	--	0.93 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Salmo trutta	BSA	--	1.33 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baytex	Oncorhynchus kisutch	BSA	--	1.32 (T4)	a, synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Baytex	Perca flavescens	BSA	--	1.65 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Baywood 43	Rasbora	BCFA	--	880 (T2)	a*,c,e,f,	One hundred sixty-four	Alabaster

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	heteromorpha	and BSA			hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	(1969), AMIC-5425
Benzelin	Resbora heteromorpha	BCFA and BSA	--	325 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Bensulide	Gasterus fasciatus	BSA	--	1.4 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978), AMIC-453
BHC (plus lindane)	White sucker	FRL	Misc. states	0.01-0.22 residue (58)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB's.	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Yellow perch	FRL	Misc. states	0.01-0.31	--	same as above	Henderson,

				residue (SB)			et al (1971), AMIC-1487
BHC (plus lindane)	Chain pickerel	FRL	Misc. states	0.07 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	White catfish	FRL	Misc. states	0.23 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	White perch	FRL	Misc. states	0.18-0.26 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Goldfish	FRL	Misc. states	0.51 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Pumpkinseed	FRL	Misc. states	0.89 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Largemouth bass	FRL	Misc. states	0.01-0.47 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Brown bullhead	FRL	Misc. states	0.01-4.37 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Carp	FRL	Misc. states	0.01-0.99 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Channel catfish	FRL	Misc. states	0.01-1.98 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Redhorse sucker	FRL	Misc. states	0.02-0.18 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
BHC (plus lindane)	Gizzard shad	FRL	Misc. states	0.06-0.18 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Spotted sucker	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Bluegills	FRL	Misc. states	0.01-0.02 residue(SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Striped mullet	FRL	Misc. states	0.28-1.14 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Blue catfish	FRL	Misc. states	0.14 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Rock bass	FRL	Misc. states	0.01-0.14 residue(SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Freshwater drum	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Bluefin	FRL	Misc. states	0.03-0.06 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
BHC (plus lindane)	Lake whitefish	FRL	Misc. states	0.09 residue(SB)	--	same as above	Henderson,et al (1971), AMIC-1487
BHC (plus lindane)	Lake trout	FRL	Misc. states	0.01-0.01 residue (SB)	--	same as above	Henderson, et al

							(1971), AMIC-1487
BHC (plus lindane)	White crappie	FRL	Misc. states	0.07-2.19 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Bigmouth buffalo	FRL	Misc. states	0.03-0.07 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Smallmouth buffalo	FRL	Misc. states	0.06 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Flathead catfish	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Goldeye	FRL	Misc. states	0.02-0.08 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Walleye	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Sauger	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Flannelmouth sucker	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Black bullhead	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	White bass	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Black crappie	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
BHC (plus lindane)	Largescale sucker	FRL	Misc. states	0.01-0.12 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Smallmouth bass	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Northern squawfish	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Chiselmouth	FRL	Misc. states	0.02-0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Rainbow trout	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Bridgelip sucker	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Arctic grayling	FRL	Misc. states	0.12 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Round whitefish	FRL	Misc. states	0.04 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC (plus lindane)	Longnose sucker	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
BHC	Puntius ticto	--	--	78 (TL)	a,c,d,e,f	Of the pesticides investigated,	Bhatia

						the most toxic was Dimfos followed in decreasing order by Sumithion, Malathion, Perathion, Dimecron, Tevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	(1971), AMIC-9423
BHC	Carcinus maenas	SSA	--	greater than 100 (T2)	ss(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
BHC	Cardium edule	SSA	--	greater than 10 (T2)	ss(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
BHC	Crangon crangon	SSA	--	0.001-0.003 (T2)	ss(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Bis hydroxyethyl) phosphinic acid	Pimephales promelas	SSA	--	29.0 (T4)	ss,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969), AMIC-3707
Bis (diethyl thio carbonoyl) disulfide	Phormidium ambiguus	L	--	8.5-10.8 (50percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be	Otto (1978), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						were toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Bis (tri-n-butyl) tin oxide	Pheraidium ambiguum	L	--	0.9-10.0 (18% percent growth inhibited 14)	--	same as above	Otto (1978), ANIC-892
Boraceae	Salmo gairdneri	SCFA and BSA	--	1.888 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-5429
Bourbon	Betta splendens	L	--	2858 (58 & hr)	a*	The effects of ethanol and bourbon on the aggressive response of Siamese fighting fish were determined. Ethanol increased gill show (aggressiveness) and bourbon and bourbon congeners decreased it. The authors tentatively concluded that the delayed effect of the congener resulted from involvement of a different physiological mechanism and that this may be related to hangover effects in man.	Reynes, et al (1968), ANIC 5712
BP 1882	Carcinus maenas	BSA	--	10-33 (T2)	as(continuous aeration, seawater, and daily	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chelates were evaluated against as many as ten marine	Portmann, et al (1971), ANIC-7781

						solution renewal)	organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
	BP 1882	Cardium edule	BSA	--	33-180 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
	BP 1882	Crangon crangon	BSA	--	3.3-10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
A-49	BP 1882	Limanda limanda	BSA	--	10-33 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
	BP 1882	Ostrea edulis	BSA	--	33-180 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
	BP 1882	Pandalus montequi	BSA	--	3.3-10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
	BP 1188X	Agonus cataphractus	BSA	--	greater than 10,000 (T4)	as(continuous aer-	same as above	Portmann, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					ation, seawater, and daily solution renewal)		AMIC-7781
BP 1186X	Cardium edule	BSA	--	greater than 10,000 (T4)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
BP 1186X	Crangon crangon	BSA	--	greater than 10,000 (T4)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
BP 1186	Agonus cataphractus	BSA	--	1000-3300 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
BP 1186	Cardium edule	BSA	--	1000-3300 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
BP 1186	Crangon crangon	BSA	--	greater than 3300 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781

BP	Fundulus heteroclitus	BSA	--	0.00001-0.00022 (T4)	a*,c,e,and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DD, CI, DD, AD, PC, NH, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1978), AMIC-445
BP	Menidia virens	BSA	--	0.00001-0.00017 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1978), AMIC-445
Brakentrein	Rasbora heteromorpha	BCFA and BSA	--	62 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Bromine	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	0.1(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.7 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1978), AMIC-3778
Bromine	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.01(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Bromine	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	0.5(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Bromine	Salvelinus namaycush	FL	Great Lakes - Superior,	0.5(residue)	--	same as above	Lucas, et al (1978),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Michigan, and Erie				AMIC-3778
Bromine	Ceresius auratus	FL	Great Lakes - Superior, Michigan, and Erie	0.3(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Bromine	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	0.8(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Bromine	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	0.8(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Bromophos	Rasbora heteromorpha	BCFA and BSA	--	0.62 (TI)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Bromoxynil (K salt)	Rasbora heteromorpha	BCFA and BSA	--	68 (TI, hardwater)	a°,c,e,f,h ard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Bromoxynil (K salt)	Rasbora heteromorpha	BCFA and BSA	--	9.8 (TI, softwater)	a°,c,e,f, hard (HW) or soft	same as above	Alabaster (1969), AMIC-5425

					(SW) synthetic dilution water, or seawater for some species		
Busan 881	Rasbora heteromorpha	BCFA and BSA	--	8.65 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Busan 90	Rasbora heteromorpha	BCFA and BSA	--	1.6 (T1, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Busan 90	Rasbora heteromorpha	BCFA and BSA	--	1.2 (T1, softwater)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Cadmium chloride (as cadmium)	Agonus cataphractus	BSA	--	33 (T4)	aa(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cadmium chloride (as cadmium)	Cardium edule	BSA	--	3.3 (T4)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
Cadmium chloride (as cadmium)	Crangon crangon	BSA	--	1.8 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
Cadmium chloride	Fundulus heteroclitus	L	--	58 (582)	a*,c	Abnormalities observed included intestine, kidney, gill filaments, and respiratory lamellae. The earliest and most severe was the intestine (and mucus within one hr). Eosinophilia occurred after 4 hr exposure, and lymphocytethrombocyte irregularities occurred after 12 hr exposure. The authors suggest broader study of blood/pathology as a means for developing a water pollution classification similar to those used in mammalian toxicology.	Gardner,et al (1981), ANIC-3827
Cadmium sulfate (as Cd)	Acroneuria	BSA	--	32 (T14)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), ANIC-3767
Cadmium sulfate (as Cd)	Ephemerella	BSA	--	2 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), ANIC-3767
Cadmium sulfate (as Cd)	Hydropsyche	BSA	--	32 (T18)	a*,c,d,e,f	same as above	Warnick, et al(1969), ANIC-3767

Cadmium	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.00006 residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 188 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778
Cadmium	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	0.0016(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	0.0002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.0005(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	0.0004(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	0.003(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	0.00007 residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	0.0014(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	0.0001(residue)	--	same as above	Lucas, et al (1970), AMIC-3778

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cadmium	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	0.0001(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	0.0002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	0.0005(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	0.0002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Cadmium	Coregonus clupeaformis	FL	Moose Lake, Can.	0.05 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et al (1971), AMIC-3819
Cadmium	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.05 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Cadmium	Esox lucius	FL	Moose Lake, Can.	0.05 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Cadmium	Esox lucius	FL	Lake St. Pierre, Can.	0.05 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Cadmium	Esox lucius	FL	Lake Erie, Can.	0.05 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819

Cadmium	Osmerus mordax	FL	Lake Erie, Can.	0.86 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Cadmium	Perca flavescens	FL	Lake Erie, Can.	0.85 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
Cadmium	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	3 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FH	Catalina Island, Cal.	3 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	4 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FH	Catalina Island, Cal.	2 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	18 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FH	Catalina Island, Cal.	6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus (gravid females)	FH	Catalina Island, Cal.	3 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	11 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	24 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	2 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	4 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Cadmium	Paralabrax clathratus	FM	Catalina Island, Cal.	4 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium chloride	Lepomis macrochirus	BSA, L	--	18,658 (T4)	ap,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5728

Calcium chloride	Nitzschia linearis	BSA, L	--	3,138 (TS)	ap,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Calcium hypochlorite (as Cl)	Phoraidium ambiguum	L	--	8.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
Calcium oxide (plus Sulfuric acid)	Ictalurus punctatus	L	--	24,288-38,488 (K2, 5-9 ppm DO)	a*,c,e*,f,o	Large and small catfish were subjected to a neutral synthetic waste approximating that being dumped by the Sunflower Army Ammunition Plant into the Kansas River. There were no apparent differences between the responses of the large and small fish. Fish in the neutral mixture swam continuously with particles of the mixture clinging to the mucus of the skin. Also, the mucus stripped away in places, and strands of mucus extended from the gills. The degree of coating of the skin, stripping of the mucus, and mortality depended on the amount of solids kept in suspension by aeration.	Sparks, et al (1969), AMIC-5982
Calcium oxide (plus Sulfuric acid)	Ictalurus punctatus	L	--	367-589(67 percent K 22-28, 5-9 ppm DO)	a*,c,e*,f,o	same as above	Sparks, et al(1969), AMIC-5982
Calcium sulfate	Lepomis macrochirus	BSA, L	--	2,988 (T4)	ap,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 25 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Calcium sulfate	Nitzschia linearis	BSA, L	--	3,288 (TS)	aa,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5728
Calcium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	728 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FN	Catalina Island, Cal.	567 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FN	Scattergood Steam Plant, LosAngeles, Cal.	1828 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FN	Catalina Island, Cal.	943 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	653 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FN	Catalina Island, Cal.	965 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988

Calcium	Paralabrax clathratus (gravid females)	FW	Catalina Island, Cal.	598 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	155 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FW	Catalina Island, Cal.	265 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	1158 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FW	Catalina Island, Cal.	1919 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	388 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FW	Catalina Island, Cal.	488 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	19,888 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Calcium	Paralabrax clathratus	FW	Catalina Island, Cal.	26,288(eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Canal bank weedkiller	Rosbera heterosepha	BCFA and BSA	--	618 (72)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true.	Alabaster (1969), AMIC-5429

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Testing the actual material as sold was found to be essential.	
Captan	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Henderson-Thomas (1971), AMIC-1856
Captan	Brachydanio rerio (larvae)	L	--	1.8 (T 30 min)	--	Folpet, Difolatan, and Captan were found to be toxic to zebrafish larvae within 90 min. Difolatan was most toxic while Captan was least toxic. Effects observed were cessation of heartbeat and loss of pigmentation. The authors recommended this as a sensitive, rapid bioassay for these and related compounds.	Abedi, et al (1968), AMIC-3717
Carbaryl	Fish (not specified)	--	--	greater than 1.0-10.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Henderson-Thomas (1971) AMIC-1856
Carbaryl	Salvelinus fontinalis (1.15 g)	BCFA	--	1.878 (T4)	as,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	Four insecticides were evaluated on four fish species at two body weights. Standard method bioassay procedures were followed. Symptomology was also reported. Generally, toxicity was significantly different at the two body weights, i.e., more toxic at the lower body weight, except for Malathion. Well-defined experimental conditions were said to result in truer measurement of toxicity.	Post, et al (1971), AMIC-1812
Carbaryl	Salvelinus fontinalis (2.84 g)	BCFA	--	1.458 (T4)	as,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Carbaryl	Salmo clarki	BCFA	--	1.5 (T4)	as,c,d,	same as above	Post, et al

		(8.37 g)				a,f,i,o, sulfate, copper, manganese, iron, and chromium		(1971),AMIC-1812
	Carbaryl	Salmo clarki (1.38 g)	SCFA	--	2.2 (T4)	ae,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971),AMIC-1812
	Carbaryl	Salmo gairdneri (1.24 g)	SCFA	--	1.47 (T4)	ae,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
	Carbaryl	Oncorhynchus kisutch (.98 g)	SCFA	--	1.3 (T4)	ae,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
	Carbaryl	Ictalurus punctatus	SSA	--	15.88 (T4)	a. synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	Macek,et al (1978), AMIC-9518
	Carbaryl	Ictalurus melas	SSA	--	28.88 (T4)	a. synthetic test water	same as above	Macek, etal (1978), AMIC-9518

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Carbaryl	Carassius auratus	BSA	--	13.28 (T4)	a, synthetic testwater	same as above	Macek,et al (1978). AMIC-9518
Carbaryl	Cyprinus carpio	BSA	--	9.28 (T4)	a, synthetic test water	same as above	Macek, et al(1978). AMIC-9518
Carbaryl	Pimephales promelas	BSA	--	14.68 (T4)	a, synthetic test water	same as above	Macek,et al (1978). AMIC-9518
Carbaryl	Lepomis macrochirus	BSA	--	6.76 (T4)	a, synthetic test water	same as above	Macek,et al (1978). AMIC-9518
Carbaryl	Lepomis microlophus	BSA	--	11.28 (T4)	a, synthetic test water	same as above	Macek,et al (1978). AMIC-9518
Carbaryl	Micropterus salmoides	BSA	--	6.48 (T4)	a, synthetic test water	same as above	Macek,et al (1978). AMIC-9518
Carbaryl	Salmo gairdneri	BSA	--	4.34 (T4)	a, synthetic test water	same as above	Macek, etal (1978). AMIC-9518
Carbaryl	Salmo trutta	BSA	--	1.95 (T4)	a, synthetic test water	same as above	Macek, et al(1978). AMIC-9518
Carbaryl	Oncorhynchus kisutch	BSA	--	8.76 (T4)	a, synthetic test water	same as above	Macek,et al (1978). AMIC-9518
Carbaryl	Perca flavescens	BSA	--	8.75 (T4)	a, synthetic test water	same as above	Macek, etal (1978). AMIC-9518
Carbon dioxide	Salmo gairdneri (yearling)	BSA	--	35 (591)	a,c, bicarbonate, and total solids	Bicarbonate in blood serum of brook trout rose to 5 times greater than that of contro Increase was slow, being half complete at 6 hr. Sodium and inorganic phosphate were not affected, but serum chloride increased. The	Lloyd, et al (1967). AMIC-9721

						authors note that the data indicate an environmental stress not related to problems of osmotic adaptation.	
	Carbophenothion	Rasbora heteromorpha	BCFA and BSA	--	2.3 (T2)	as*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-5425
	Carbyne	Rasbora heteromorpha	BCFA and BSA	--	8.5 (T2)	as,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), ANIC-5425
	Carbyne	Rasbora heteromorpha	BCFA and BSA	--	1.4 (T2)	as,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), ANIC-5425
	Carbyne	Asterias rubens	BSA	--	3.3-10 (K 1 HP)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), ANIC-7701
	Carbyne	Cardium edule	BSA	--	188 (T2)	as(continuous aer-	same as above	Portmann, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					ation, seawater, and daily solution renewal)		AMIC-7701
Carbyne	Crangon crangon	BSA	--	3.3-10 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Casol	Pimephales promelas	BSA	--	32.8 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are given as "most probable" 96-hr TL sub m.	Zillich (1969), AMIC-2989
Casol	Pimephales promelas	BSA	--	4.4 (NSC)	c,d,e,f	same as above	Zillich (1969), AMIC-2989
Casol	Biochemical oxygen demand	L	--	610,000	c,d,e,f	same as above	Zillich (1969), AMIC-2989
Caseron G	Rasbora heteromorpha	BCFA and BSA	--	100 (T2)	ae,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425

Caseron 133	Rasbora heteromorpha	BCFA and BSA	--	13 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Caseron	Morone saxatilis (fingerlings)	BSA	--	6,200 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Caseron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Caseron	Cardium edule	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Caseron	Crangon crangon	BSA	--	3.3-10 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Crangon septemspinosa	BSA	--	0.32(T4)	a*,c,e, SSM	Although data cited were taken at 20 C and 2.0 percent salinity, varying temperature and salinity were also studied. Higher temperature (28 C) and lower salinity (5.0 percent) resulted in greater susceptibility of mummichogs to cadmium. TL sub 25, TL sub 50, and TL sub 75 for 24 and 48 hr are also presented. Post treatment mortality of mummichogs was also observed for considerably prolonged periods (up to 58 days). Teleosts were less susceptible than crustacea. Residue levels in mummichogs were also reported, e.g., whole body residues in excess of 86 mg Cd/kg body ash resulted in death within 5 wk. A review and discussion of results are also included.	Eisler (1971), AMIC-1621

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Fundulus heteroclitus	BSA	--	55.8 (T4)	s°,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Pagurus longicarpus	BSA	--	8.32 (T4)	s°,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Palaemonetes vulgaris	BSA	--	8.42 (T4)	s°,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Asterias forbesi	BSA	--	8.82 (T4)	s°,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Mya arenaria	BSA	--	2.2 (T4)	s°,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Carcinus maenus	BSA	--	4.1 (T4)	s°,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Urosalpinx cinerea	BSA	--	6.6 (T4)	s°,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Fundulus majalis	BSA	--	21.8 (T4)	s°,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Mytilus edulis	BSA	--	25.8 (T4)	s°,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H20 (as Cd 2 plus)	Cyprinodon variegatus	BSA	--	58.8 (T4)	s°,c,e, SSM	same as above	Eisler (1971), AMIC-1621

Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Nassarius obsoletus	BSA	--	10.5 (T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Cd Cl2 . 2.5 H2O (as Cd 2 plus)	Nereis virens	BSA	--	11.0(T4)	a*,c,e, SSM	same as above	Eisler (1971), AMIC-1621
Chevron NI-8	Steelhead trout (fingerlings)	BSA	--	3.2 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al(1969), AMIC-3834
Chevron NI-O	Coho salmon (fingerlings)	BSA in situ	Hood Canal Boodsport, Wash.	0.001 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Chloral hydrate	Negaprion brevirostris (1-3 kg)	BSA	--	300 (SB 1 hr)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge(1969), AMIC-3832
Chloramine	Gammarus pseudo-limnaeus	BCF	--	0.22 (T4)	ao,c,d,e, f,rm,s	Chloramine toxicity was very carefully studied using weight reduction and reproduction over 15 to 21 week exposure periods. Loss of weight and ability to reproduce were observed at concentrations less than that observed for toxicity. The lowest chloramine concentration having no significant effect was less than 3.4 ppb for Gammarus and 0.017 ppb for the fathead minnow.	Arthur, et al (1971), AMIC-3290
Chloramine	Pimephales promelas	BCF	--	0.15 (T3) 0.09-0.15 (T4)	ao,c,d,e, f,rm,s	same as above	Arthur, et al (1971), AMIC-3290
Chloramine	Daphnia magna	BCF	--	0.001 (K 3-5)	ao,c,d,e, f,rm,s	same as above	Arthur, et al(1971), AMIC- 3290
Chloramphenicol	Mercenaria	L	--	74.3 (T2)	--	The effect of 52 pesticides on	Davis, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	mercenaria (eggs)					embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	(1969),AMIC-5998
Chloramphenicol	Mercenaria mercenaria (larvae)	L	--	98.8 (T12)	--	same as above	Davis, et al(1969), AMIC-5998
Chloramphenicol	Pheridium subiguum	L	--	8.5-10.8 (MTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of ost-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto(1978), AMIC-892
Chlorex	Salmo gairdneri	BCFA and BSA	--	1,888 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true.	Alabaster (1969), AMIC-5429

						Testing the actual material as sold was found to be essential.	
Chlordane	White sucker	FRL	Misc. states	0.12-0.44 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 58 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, tiplds, and PCB"s.	Henderson,et al (1971), AMIC-1487
Chlordane	White perch	FRL	Misc. states	1.75 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
Chlordane	Largemouth bass	FRL	Misc. states	0.95 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
Chlordane	Brown bullhead	FRL	Misc. states	0.31 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
Chlordane	Carp	FRL	Misc. states	0.09-0.68 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
Chlordane	Channel catfish	FRL	Misc. states	0.09-1.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Chlordane	Redhorse sucker	FRL	Misc. states	0.20 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
Chlordane	Gizzard shad	FRL	Misc. states	13.5 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
Chlordane	Striped mullet	FRL	Misc. states	0.09 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
Chlordane	Blue catfish	FRL	Misc. states	1.38 (SB)	--	same as above	Henderson, et al (1971),AMIC-1487
Chlordane	Walleye	FRL	Misc. states	0.10 residue (SB)	--	same as above	Henderson, et al (1971),AMIC-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							1487
Chlordane	Lepomis cyanellus (Resistant)	BSA	--	3.28 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant fish were compared to susceptible ones collected at Starkville.	Minchew, et al(1978), AMIC-9471
Chlordane	Lepomis cyanellus (Susceptible)	BSA	--	0.89 (T2)	a*	same as above	Minchew, et al(1978), AMIC-9471
Chlordane	Notemigonus crysoleucas (Resistant)	BSA	--	2.33 (T2)	a*	same as above	Minchew, et al(1978), AMIC-9471
Chlordane	Notemigonus crysoleucas (Susceptible)	BSA	--	0.41 (T2)	a*	same as above	Minchew, etal (1978), AMIC-9471
Chlordane	Palaemonetes kadiakensis (resistant)	BSA	--	0.0779-0.334 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 29 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; least toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1978), AMIC-9519
Chlordane	Copepods (Cyclops bicuspidus Cyclops varicans, Mesocyclops	FL and BSA	State College, Miss	0.38 (K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant	Naqvi, et al (1969), AMIC-9979

		agilis, Macrocyclops albidus, Orthocyclops modestus)					species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	
	Chlordane	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.38 (96percent K2)	--	same as above	Naqvi, et al (1969), AMIC-9979
	Chlordane	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.98 (MTE)	--	same as above	Naqvi, et al(1969), AMIC-9979
A-73	Chloroe	Salae gairdneri	BCFA and BSA	--	1,100 (TI)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-9425
	Chlorfenvinphos	Rasbora heteromorpha	BCFA and BSA	--	0.25 (TI)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-9425
	Chlorfenvinphos	Rasbora heteromorpha	BCFA and BSA	--	3.55 (TI)	aa,c,e,f, hard (HW) or soft (SW)	same as above	Alabaster (1969), AMIC-9425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					synthetic dilution water, or seawater for some species		
Chlorine	Pimephales promelas	BSA (ML)	Grand River, Wyoming, Mich.	0.87-0.15 (T4)	--	The indicated toxic levels of chloride occurred in 3.84 percent and 7.84 percent dilutions of wastewater effluent in river water. Sublethal effects were noted at dilutions as low as 1.92 percent. The authors note that this chemical at low concentrations 0.05 mg/l may seriously degrade fish populations in rivers.	Zillich, et al (1969), ANIC-2878
Chlorine	Fathead minnow	BSA (ML)	Grand River, Lansing, Mich.	0.33 percent(KI, NWD)	--	Striking sublethal effects were noted at lower dilutions. Dechlorination did not remove toxicity of the wastewater since toxic effects were noted at dilutions of 47 and 58 percent of dechlorinated waste water. Cyanide was present at 0.2 mg/l and may have had some influence on the results. The authors concluded that the waste water caused severe degradation of the Grand River.	Zillich, et al (1970), ANIC-2899
Chlorofluorazole	Rasbora heteromorpha	BCFA and BSA	--	0.13 (T2)	a*,c,e,f, hard (HW) orsoft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-5425
Chloropropylate	Rasbora heteromorpha	BCFA and BSA	--	20 (T2)	as,c,e,f, hard (HW) or soft (SW) syn-	same as above	Alabaster (1969), ANIC-5425

					thetic dilution water, or seawater for some species		
Chlorthiamid	Rasbora heteromorpha	BCFA and BSA	--	30 (T2)	s*.c.e.f. hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5429
Chromates (as chromium)	Agonus cataphractus	BSA	--	33-188 (T2)	ss(continuous aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Chromates (as chromium)	Asterias rubens	BSA	--	33-188 (T2)	ss(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Chromates (as chromium)	Cardium edule	BSA	--	188-338 (T2)	ss(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Chromates (as chromium)	Crangon crangon	BSA	--	188 (T2)	ss(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Chromic chloride (as Cr)	Acroneuria	BSA	--	32 (T7)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Chromic chloride (as Cr)	Ephemerella	BSA	--	2 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Chromic chloride (as Cr)	Hydropsyche	BSA	--	64 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Chromium trioxide (as Cr)	Pharoidium ambiguum	L	--	0.5-10.0 (MTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
Chromium	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	1.1(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1978), AMIC-3778

Chromium	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	9.5(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Chromium	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	2.4(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Chromium	Coregonus clupeaformis	FL	Moose Lake, Can.	0.83 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et al (1971), AMIC-3819
Chromium	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.82 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Chromium	Esox lucius	FL	Moose Lake, Can.	0.84 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Chromium	Esox lucius	FL	Lake St. Pierre, Can.	0.83 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Chromium	Esox lucius	FL	Lake Erie, Can.	0.83 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Chromium	Osmerus mordax	FL	Lake Erie, Can.	0.83 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Chromium	Perca flavescens	FL	Lake Erie, Can.	0.87 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Chromium	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	1.3 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Chromium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	4.8 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FN	Catalina Island, Cal.	5.5 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	0.9 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FN	Catalina Island, Cal.	1.7 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FN	Catalina Island, Cal.	1.7 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	1.4 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FN	Catalina Island, Cal.	1.4 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988

Chromium	Paralabrax clathratus	FM	Catalina Island, Cal.	2.3 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	2.6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.5 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.9 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Chromium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.4 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Citric acid	Carcinus maenas	BSA	--	168 (T2)	ap(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
CI	Fundulus heteroclitus	BSA	--	0.00814-0.0812 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DD, CI, OD, AQ, PC, HH, TH, BP, and HA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445
CI	Nereis virens	BSA	--	0.0882-0.0887 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cleanosol	Cardium edule	BSA	--	16-33 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Cleanosol	Crangon crangon	BSA	--	33-166 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Cleanosol	Pandalus montaqui	BSA	--	33 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Stephen A38	Agonus cataphractus	BSA	--	greater than 10 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Stephen A38	Cardium edule	BSA	--	3 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Stephen A38	Crangon crangon	BSA	--	0.83-1.0 (T2)	ae(continuous aeration, seawater, and	same as above	Portmann, et al (1971), AMIC-7781

						daily solution renewal)		
Stephan A68	Agonus cataphractus	BSA	--	greater than 10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above		Portmann, et al (1971), AMIC-7781
Stephan A68	Cardium edule	BSA	--	greater than 10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above		Portmann, et al(1971), AMIC-7781
Stephan A68	Crangon crangon	BSA	--	greater than 10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above		Portmann, et al(1971), AMIC-7781
Stephan A 48	Crangon crangon	BSA	--	1.8-3.3 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above		Portmann, et al (1971), AMIC-7781
Stephan A 58	Crangon crangon	BSA	--	3.3-10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above		Portmann, et al (1971), AMIC-7781
CN, Cu, Ni, Cr, and Zn	Pimephales promelas	BSACF (ML)	Grand River at	between 1.25-3.75	a,c,e, conductivity,	A mobile bioassay unit was utilized to conduct this study of municipal wastewater containing the indicated toxicants. River water was used as diluent. The conclusion was reached that synergistic or additive toxic effects occurred since toxicity was greater than that of any of the ions singly.		Zillich (1969).

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Wyoming,Michigan	percent (T3)	Ni,Cu,Cr, CN, and Zn		AMIC-2986
CN, Cu, Ni, Cr, and Zn	Catostomus commersoni	BSACF (ML)	Grand River at Wyoming,Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	same as above	Zillich (1969), AMIC-2986
Cobaltous sulfate (as Co)	Acroneuria	BSA	--	32 (T8)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Cobaltous sulfate (as Co)	Ephemerella	BSA	--	16 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Cobaltous sulfate (as Co)	Hydropsyche	BSA	--	32 (T7)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Cobalt	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.029(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1978), AMIC-3778
Cobalt	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	0.020(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Cobalt	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan,	0.023(residue)	--	same as above	Lucas, et al (1978), AMIC-3778

			and Erie				
Cobalt	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.026(residue)	--	same as above	Lucas, et al (1978), ANIC-3778
Cobalt	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	0.047(residue)	--	same as above	Lucas, et al (1978), ANIC-3778
Cobalt	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	0.033(residue)	--	same as above	Lucas, et al (1978), ANIC-3778
Cobalt	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	0.013(residue)	--	same as above	Lucas, et al (1978), ANIC-3778
Cobalt	Hetreals hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	0.033(residue)	--	same as above	Lucas, et al (1978), ANIC-3778
Cobalt	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	0.023(residue)	--	same as above	Lucas, et al (1978), ANIC-3778
Cobalt	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	0.043(residue)	--	same as above	Lucas, et al (1978), ANIC-3778
Cobalt	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	0.128(residue)	--	same as above	Lucas, et al (1978), ANIC-3778
Cobalt	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	0.045(residue)	--	same as above	Lucas, et al (1978), ANIC-3778
Cobalt	Paralabrax clathratus	FH	Scatterged Steam Plant, LosAngeles, Cal.	1.4 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element	Stapleton (1968), ANIC-5988

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	
Cobalt	Paralabrax clathratus	FM	Catalina Island, Cal.	2.2 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5989
Cobalt	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.2(ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Cobalt	Paralabrax clathratus	FM	Catalina Island, Cal.	4.3 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Cobalt	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	3.6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Cobalt	Paralabrax clathratus	FM	Catalina Island, Cal.	4.4 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Cobalt	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	3.7(gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Cobalt	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	1.4 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988

Cobalt	Paralabrax clathratus	FH	Catalina Island, Cal.	1.9 (liver residue)	--	same as above	Stapleton (1968). AMIC-5988
Cobalt	Paralabrax clathratus	FH	Scattergood Steam Plant, LosAngeles, Cal.	1.8 (integument residue)	--	same as above	Stapleton (1968). AMIC-5988
Cobalt	Paralabrax clathratus	FH	Catalina Island, Cal.	1.4 (integument residue)	--	same as above	Stapleton (1968). AMIC-5988
Cobalt	Paralabrax clathratus	FH	Scattergood Steam Plant, LosAngeles, Cal.	1.7 (heart residue)	--	same as above	Stapleton (1968). AMIC-5988
Cobalt	Paralabrax clathratus	FH	Catalina Island, Cal.	1.2 (heart residue)	--	same as above	Stapleton (1968). AMIC-5988
Cobalt	Paralabrax clathratus	FH	Scattergood Steam Plant, LosAngeles, Cal.	5.2 (eyeball residue)	--	same as above	Stapleton (1968). AMIC-5988
Cobalt	Paralabrax clathratus	FH	Catalina Island, Cal.	5.1 (eyeball residue)	--	same as above	Stapleton (1968). AMIC-5988
Cocoamine diacetate	Phormidium ambiguum	L	--	8.5-10.0 (MTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (8.85 and 0.885 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte(1970). AMIC-892
Coco monoethanolamide polyus ethylene oxide, ethoxy	Cardium edule BSA	--		greater than 100 (72)	as(continuous aeration, seawater, and	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were	Portmann, et al (1971). AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
monoethanolamide)					daily solution renewal)	evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Coco monoethanolamide (plus ethylene oxide, ethoxy monoethanolamide)	Crangon crangon	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Coco monoethanolamide (plus ethylene oxide, ethoxy monoethanolamide)	Carcinus maenas	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Coco monoethanolamide	Cardium edule	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Coco monoethanolamide	Crangon crangon	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Compass	Cardium edule	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most	Portmann, et al (1971), AMIC-7701

						renewal)	published data of this type deal with toxicity of chemicals to freshwater organisms.	
	Copepod	Crangon crangon	BSA	--	greater than 100 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
	Copepod	Carcinus maenas	BSA	--	greater than 100 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
	Cooper's fly did (new type)	Rasbora heteromorpha	BCFA and BSA	--	3.55 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969), ANIC-5425
	Copper chloride (as Cu)	Lepomis macrochirus	BSA, L	--	1.25 (T4)	ae,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 28 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 18-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), ANIC-4728
	Copper chloride (as Cu)	Nitzschia linearis	BSA, L	--	8.61 (T5)	ae,e, and synthetic dilution water	same as above	Patrick, et al (1968), ANIC-4728
	Copper	Phoxidium	L	--	8.5-18.8 (16	--	Of 74 chemicals evaluated as	Otto (1978),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
methane-arsonate	subiguus			percent growth inhibited(4)		algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	AMIC-892
Copper salts	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Newdeley-Thomas(1971) AMIC-1056
Copper salt of endothall	Pheraidium subiguus	L	--	8.5-10.8 (MTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
Copper sodium citrate (as Cu)	Watersipora cucullata (larvae)	L	--	0.63 (T 2 hr)	s,e,i, and salinity	This study was conducted to determine species of marine larvae suitable for use in test screening antifouling chemicals. A salina (brine shrimp) appeared to have the best potential for this purpose. A salina larvae sensitivity was greatest starting at age 20-80 hr, and tolerated relatively low pH (5.0).	Wisely, et al (1967), AMIC-5708

Copper sodium citrate (as Cu)	Bugula neritina (larvae)	L	--	3.90 (T 2 hr)	s,o,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Copper sodium citrate (as Cu)	Spirorbis lamellosa (larvae)	L	--	0.48 (T 2 hr)	s,o,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Copper sodium citrate (as Cu)	Galeolaria caespitosa (larvae)	L	--	2.90 (T 2 hr)	s,o,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Copper sodium citrate (as Cu)	Mytilus edulis planulatus (larvae)	L	--	23 (T 2 hr)	s,o,i, and salinity	same as above	Wisely, et al (1967), AMIC-5708
Copper sulfate plus Alkylaryl polyoxethylene glycols	Phormidium ambiguum	L	--	8.5-18.8 (188 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (8.85 and 8.885 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1970), AMIC-892
Copper sulfate plus Ammonium carbonate (1:2)	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otte (1970), AMIC-892
Copper sulfate plus Ammonium chloride (2:1	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otte (1970), AMIC-892
Copper sulfate plus Zinc sulfate (1:2)	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otte (1970), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Copper sulfate plus Calcium salt of polyoxyethylene	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otto (1978), AMIC-892
Copper sulfate plus Dodecylether of polyethylene glycol	Phormidium ambiguum	L	--	0.5-10.0 (50 percent growth inhibited 14)	--	same as above	Otto (1978), AMIC-892
Copper sulfate plus Emulsifiable polyethylene	Phormidium ambiguum	L	--	0.5-10.0(25 percent growth inhibited 14)	--	same as above	Otto (1978), AMIC-892
Copper sulfate plus Ethoxylated isooctyl phenoxy polyethoxy ethanol	Phormidium ambiguum	L	--	0.5-10.0 (50 percent growth inhibited 14)	--	same as above	Otto (1978), AMIC-892
Copper sulfate plus Ethoxylated nonyl phenylether	Phormidium ambiguum	L	--	0.5-10.0 (50 percent growth inhibited 14)	--	same as above	Otto (1978),AMIC-892
Copper sulfate plus Polyoxyethlene nonyl phenylether	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	same as above	Otto (1978), AMIC-892
Copper sulfate (as copper)	Carcinus maenas	BSA	--	109 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781

Copper sulfate (as copper)	Cardium edule	BSA	--	1.8 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7781
Copper sulfate (as copper)	Crangon crangon	BSA	--	19 (T4)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7781
Copper sulfate (as copper)	Ostrea edulis	BSA	--	100 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7781
Copper sulfate (as copper)	Pandalus montagui	BSA	--	14 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7781
Copper sulfate (as copper)	Platichthys flesus	BSA	--	1.8-3.3 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7781
Copper sulfate (as Cu2 plus)	Salmo gairdneri (eggs and sperm)	LCF	--	1.8 (NTE)	s.c.f	Data were given in mg/l which was taken to be the equivalent of ppm. Fertilization rates were statistically similar in both test (Cu and Ni) and control waters. The rate of hatching was significantly different for eggs exposed to Cu and the rate of development was	Shaw, et al (1971). AMIC-1444

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						increased. The authors concluded that in hard waters neither Cu nor Ni is likely to impair fertilization in rainbow trout.	
Copper sulfate (as Cu)	Acroneuria	BSA	--	8.3 (T4)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al (1969), AMIC-3767
Copper sulfate (as Cu)	Ephemerella	BSA	--	8.32 (T2)	a*,c,d,e,f	same as above	Warnick, et al (1969), AMIC-3767
Copper sulfate (as Cu)	Hydropsyche	BSA	--	32 (T14)	a*,c,d,e,f	same as above	Warnick, et al (1969), AMIC-3767
Copper sulfate (as Cu)	Phormidium oebliquum	L	--	0.5-10.0 (83 percent growth inhibited14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.0% and 0.005% ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1978), AMIC-892
Copper sulfate	Pseudopleuro nectes americanus (3 yr)	LCF	--	0.188 (28)	a*,c,e	Winter flounder were exposed to varied concentrations of copper and selected tissues examined by light and electron microscopy. Medium to high concentrations of copper resulted in fatty liver deposits, kidney necrosis, hemopoetic tissue destruction, and gill architectural changes as determined by light microscopic analysis. Seven additional organs or structures were	Baker (1969), AMIC-3763

						apparently unaffected. Low levels of copper caused varied anomalies in gill lamellae as determined by electron microscopy.	
Copper sulfate	Pseudopleuronectes americanus (3 yr)	LCF	--	0.560-3.2 (KZ9)	a*,c,e	same as above	Baker (1969), AMIC-3763
Copper sulfate	Pimephales promelas	BSA	--	0.884 (T4)	ae,c,d,e, f, acidity conductivity, and Cu	Copper at 18.4 ppb affected survival, growth, and spawning. Lower concentrations also reduced growth and spawning but apparently not egg hatchability. The maximum acceptable toxicant concentration (MATC) for the fathead minnow was calculated to be between 0.13 to 0.22 of the 96-hr TL sub a. Some difference in results in hard and soft water was found but the authors recommend further study. Use and further development of the application factor approach was further recommended.	Mount, et al (1969), AMIC-3764
Copper sulfate	Pimephales promelas	BCFA	--	0.875 (T4)	ae,c,d,e, f, acidity, conductivity, and Cu	same as above	Mount, et al (1969), AMIC-3764
Copper sulfate	Pimephales promelas	BCFCH	--	0.818 (T 12 MO)	ae,c,d,e, f, acidity, conductivity, and Cu	same as above	Mount, et al (1969), AMIC-3764
Copper sulfate	Lepomis macrochirus (juvenile)	L	--	1-5 (S81)	a*,c,e,f	Copper caused a respiratory increase as concentration levels were increased. Recovery from initial stress by copper was delayed at higher concentrations. The author suggests the flowing water fish respirometer technique as a fast and sensitive tool for evaluating pollutants.	O'Hara (1971), AMIC-3793
Copper sulfate	Trachinotus carolinus (juvenile)	BSA	--	1.4-2.8 (T4)	a,c,e,f,i, and sulfate, sodium, calcium, potassium, magnesium,	In this study of seawater salinity was controlled at 18, 28, and 38 ppt and investigated as a variable. Acriflavin, formalin, and potassium permanganate were slightly more toxic at the highest salinity, while copper sulfate was slightly less toxic. These compounds are	Birdsong, et al (1971), AMIC-5578

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					carbonate, bicarbonate, salinity	used as prophylactic bacterial treatments. All appeared to be reasonably safe to use except possibly potassium permanganate.	
Copper sulfate	Oncorhynchus tshawytscha (eggs)	BCFA	--	0.08 (MTE)	a*,c,d,f	Chinook salmon eggs were more resistant to copper sulfate than were fry. Growth was also inhibited. Adverse effects on fry were noted at concentrations as low as 0.02 ppm. The authors recommend further laboratory and in situ studies.	Mazel, et al (1978), ANIC-5572
Copper sulfate	Oncorhynchus tshawytscha (fry)	BCFA	--	0.04 (93 percent K)	a*,c,d,f	same as above	Mazel, et al (1978), ANIC-5572
Copper sulfate	Roccus saxatilis (fingerlings)	BSA	--	0.62 (T4)	ae,c,d,e, f,g, and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), ANIC-5723
Copper sulfate	Orconectes rusticus	BCFA	--	3.8 (T4)	a*,c,e,f,g	Adult crayfish were found to be more resistant to copper sulfate than the young. Several life stages were studied, and additional exposure variations were included in the experimentation. Mortality of newly-hatched crayfish occurred at 0.125 ppm, and growth was inhibited at concentrations down to 0.015 ppm over a 38-day period. Sublethal effects of copper were well established and the procedure appears to be a good one.	Hubschman (1967), ANIC-5985
Copper sulfate	Orconectes rusticus	BCFCH	--	1.8 (T13)	a*,c,e,f,g	same as above	Hubschman (1967), ANIC-5985
Copper sulfate	Orconectes rusticus	BCFCH	--	0.015 (SB)	a*,c,e,f,g	same as above	Hubschman (1967), ANIC-5985
Copper (as Copper sulfate)	Campeloma decisum	BCFA and CH	--	1.7 (T4)	a,c,d,e,f	Survival, growth, reproduction, and feeding were the responses used to	Arthur, et al (1978),

						measure toxicant effects. Stock copper solutions were prepared by dissolving anhydrous copper sulfate in distilled water acidified with sulfuric acid. Chronic tests (6 weeks) with copper concentrations of 0.0148 and 0.028 ppm markedly reduced survival of all three species and prevented growth of Physa and Gammarus. Levels of 0.008 did not affect growth of Physa or Gammarus, feeding of Carpelcms, or reproduction of Gammarus. However, growth and survival of the F1 Gammarus were affected at concentrations greater than 0.0046 ppm. Safe limits for Gammarus were 0.0046-0.008 in a continuous flow system and 0.0129-0.0239 in a static system.	AMIC-867
Copper (as Copper sulfate)	Carpelcms declsum	BCFA and CH	--	0.008-0.0148 (NTE6 wk)	a,c,d,e,f	same as above	Arthur, et al (1978), AMIC-867
Copper (as Copper sulfate)	Physa integra	BCFA and CH	--	0.019 (T4)	a,c,d,e,f	same as above	Arthur, et al (1978), AMIC-867
Copper (as Copper sulfate)	Physa integra	BCFA and CH	--	0.008-0.0148 (NTE 6 wk)	a,c,d,e,f	same as above	Arthur, et al (1978), AMIC-867
Copper (as Copper sulfate)	Gammarus pseudo-limnaeus	BCFA and CH	--	0.020 (T4)	a,c,d,e,f	same as above	Arthur, et al (1978), AMIC-867
Copper (as Copper sulfate)	Gammarus pseudo-limnaeus	BCFA and CH	--	0.008-0.0148(NT E 6 wk)	a,c,d,e,f	same as above	Arthur, et al (1978), AMIC-867
Copper (plus PHENOL)	Salmo gairdneri	BSA	--	0.9-1.75 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol: copper, zinc, and phenol: and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al(1978), AMIC-5994
Copper (plus zinc, nickel)	Salmo gairdneri	BSA	--	0.9-1.8 (T2)	a,c,e	same as above	Brown,et al (1978), AMIC-5994

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Copper (plus zinc, phenol)	Salmo gairdneri	BSA	--	0.6-2.48 (T2)	s.c.e	same as above	Brown,et al (1970), AMIC-5994
Copper	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.9(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 190 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 28 ppb, mercury - 18 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.86 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.881 ppb.	Lucas, et al (1970), AMIC-3778
Copper	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	12(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	5.4(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	4.9(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	3.8(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	24(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Copper	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	1.9(residue)	--	same as above	Lucas, et al (1970), AMIC-3778

Copper	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	14(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Copper	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	1.8(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Copper	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	1.8(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Copper	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	4(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Copper	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	3(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Copper	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	4(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Copper	Coregonus clupeaformis	FL	Moose Lake, Can.	0.5 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et AL(1971), AMIC-3819
Copper	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.9 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Copper	Esox lucius	FL	Moose Lake, Can.	0.87 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Copper	Esox lucius	FL	Lake St. Pierre, Can.	0.9 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Copper	Esox lucius	FL	Lake Erie, Can.	0.7 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Copper	Osmerus mordax	FL	Lake Erie, Can.	0.6 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Copper	Perca flavescens	FL	Lake Erie, Can.	1.3 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Copper	Salvelinus fontinalis (eggs)	BDFCH	--	0.018 (MTE)	a*,c,d,e,f	A concentration of 17.5 ppb copper did not adversely affect survival, growth, or spawning of brook trout. However, this concentration level had drastic effect on juvenile trout. The copper also delayed yolk sac absorption and delayed fry development. The maximum acceptable toxicant concentration (MATC) was calculated to be between 9.5 to 17.4 ppb copper.	McKim, et al (1978), AMIC-3821
Copper	Salvelinus fontinalis (juveniles)	BDFCH	--	0.017 (K)	a*,c,d,e,f	same as above	McKim,et al (1978), AMIC-3821
Copper	Salvelinus fontinalis (adults)	BDFCH	--	0.1 (T4)	a*,c,d,e,f	same as above	McKim, etal (1978), AMIC-3821
Copper	Paralabrax clathratus	FH	Scattergood Steam Plant, LosAngeles, Cal.	2 (dorsal muscle RESIDUE)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author	Stapleton (1968), AMIC-5980

						concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	
Copper	Paralabrax clathratus	FH	Catalina Island, Cal.	2 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FH	Scattergood Steam Plant, LosAngeles, Cal.	2 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FH	Catalina Island, Cal.	2 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FH	Scattergood Steam Plant, LosAngeles, Cal.	6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FH	Catalina Island, Cal.	5 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus (gravid females)	FH	Catalina Island, Cal.	5 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FH	Scattergood Steam Plant, LosAngeles, Cal.	5 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FH	Catalina Island, Cal.	6 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FH	Scattergood Steam Plant, LosAngeles, Cal.	3 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FH	Catalina Island, Cal.	3 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FH	Scattergood Steam Plant, LosAngeles,	15 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Cal.				
Copper	Paralabrax clathratus	FM	Catalina Island, Cal.	12 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	8 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Paralabrax clathratus	FM	Catalina Island, Cal.	4 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Copper	Salmo gairdneri	BSA	--	8.75 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol; copper, zinc, and phenol; and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al (1970), AMIC-5994
Corexit 7664	Pimephales promelas	BSA	--	3288 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are given as "most probable" 96-hr TL sub a.	Zillich (1969), AMIC-2989
Corexit 7664	Pimephales promelas	BSA	--	188 (MSC)	c,d,e,f	same as above	Zillich (1969), AMIC-2989
Corexit 7664	Biochemical oxygen demand	L	--	388,888	c,d,e,f	same as above	Zillich (1969), AMIC-2989
Corexit 7664	Steelhead trout (fingerlings)	BSA	--	15.8 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit	Tracy, et al (1969), AMIC-3834

							7784 appeared to have the least toxicity with fair to good oil dispersion capability.	
	Corexit 7664	Coho salmon (fingerlings)	BSA in situ	Hood Canal Hoodsport, Wash.	40.0 (E)	--	same as above	Tracy, et al (1969), AMIC-3834
	Corexit 7664	Pacific oyster (larvae)	BSA in situ	Hood Canal Hoodsport, Wash.	40.0-80.0 (SB)	--	same as above	Tracy, et al (1969), AMIC-3834
	Corexit 7664	Cardium edule	BSA	--	3388-10,888 (TZ)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
	Corexit 7664	Crangon crangon	BSA	--	3388-10,888 (TZ)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Corexit 7664	Lisanda lisanda	BSA	--	1888-3388 (TZ)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Corexit 7664	Salmo salar (parr)	L	--	588 (NTE4)	a*,e (mixed tap or seawater)	Arectors 1254 and 1221 were evaluated for toxic effect with Corexit 7664 (weight ratio 1:1:1) as an emulsifying agent. Since only two fish were used for each exposure, the author notes that the results are only preliminary. However, PCB*s appeared to be less toxic to Atlantic salmon parr than chlorinated hydrocarbon pesticides.	Zitko (1970), AMIC-23
	Corexit 7664	Gammarus oceanicus	BSA	--	1988 (NTE)	a* (weekly solution change, seawater)	Arector 1254 solutions or suspensions with Corexit 7664 at varied concentrations in seawater resulted in varying toxicity of the Arector. Corexit was not lethal at 1988 ppm but caused subtethal branchial edema at	Wildish (1970), AMIC-69

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						concentrations down to 0.19 ppm. The author notes a possible synergistic effect between the two compounds.	
Cerexit 7664	Cancerus oceanicus	BSA	--	0.19 (SB)	a* (weekly solution change, seawater)	same as above	Wildish (1978), AMIC-69
Cerexit 8666	Crangon crangon	BSA	--	3388 (T2)	a*(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Coumaphos	Rasbora heteromorpha	BCFA and BSA	--	0.846 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Co-Pel	Morone saxatilis (fingerlings)	BSA	--	62 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casoron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-9971
Co-Pel	Mercenaria mercenaria (eggs)	L	--	9.12 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected	Davis, et al (1969), AMIC-5998

							development were than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
	Co-Ral	Mercenaria mercenaria (larvae)	L	--	9.21 (T 12)	--	same as above	Davis, et al (1969), AMIC-5990
	Co-Ral	Crassostrea virginica (eggs)	L	--	8.11 (T2)	--	same as above	Davis, et al (1969), AMIC-5990
	Co-Ral	Crassostrea virginica (larvae)	L	--	greater than 1.8 (T 14)	--	same as above	Davis, et al (1969), AMIC-5990
	Craine OSR	Crangon crangon	BSA	--	328-1000 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
	Cresols	Agonus cataphractus	BSA	--	10-33 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
	Cresols	Carcinus maenas	BSA	--	10-188 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Cresols	Cardium edule	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Cresols	Pleuronectes platessa	BSA	--	10-33 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Crossguard	Crangon crangon	BSA	--	3.3-10 (T4)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Crotothane	Rasbora heteromorpha	BCFA and BSA	--	0.87 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969), AMIC-5425
Crew solvent H	Crangon crangon	BSA	--	33-100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781

Cr, Ni, Cu, CN, and Zn	Pimephales promelas	BIACF (ML)	Grand River at Wyoming, Michigan	between 1.25-3.75 percent (TS)	S.C.W. conductivity, Ni, Cu, Cr, CN, and Zn	A mobile bioassay unit was utilized to conduct this study of municipal wastewater containing the indicated toxicants. River water was used as diluent. The conclusion was reached that synergistic or additive toxic effects occurred since toxicity was greater than that of any of the ions singly.	Zillich (1969), AMIC-2986
Cr, Ni, Cu, CN, and Zn	Catostomus commersoni	BIACF (ML)	Grand River at Wyoming, Michigan	between 1.25-3.75 percent (TS)	S.C.W. conductivity, Ni, Cu, Cr, CN, and Zn	same as above	Zillich (1969), AMIC-2986
OS	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al. (1971), AMIC-3253
CuCl2 2H2O (as Cu)	Platysomas subcordiformis	L	--	approx. 1.0 (K)	SSW and NSW	NTA stimulated algal growth in cultures without added copper and reduced toxicity of copper at all levels of copper addition. See information on CuCl2.H2O (as Cu) under authors cited for further information.	Erickson, et al (1978), AMIC-449
CuCl2 2H2O (as Cu)	Porphyridium cruentum	L	--	approx. 0.5(K)	SSW and NSW	same as above	Erickson, et al (1978), AMIC-449
CuCl2 2H2O (as Cu)	Skeletonema costatum	L	--	approx. 0.15 (K)	SSW and NSW	same as above	Erickson, et al (1978), AMIC-449
CuCl2 2H2O (as Cu)	Amphidinium carteri	L	--	less than 0.05 (K)	SSW and NSW	same as above	Erickson, et al (1978), AMIC-449
CuCl2 2H2O (as Cu)	Chaetoceros sp	L	-	approx. 0.05 (K)	SSW and NSW	same as above	Erickson, et al (1978), AMIC-449
CuCl2 2H2O (as Cu)	Cyclotella nana	L	--	approx. 0.15 (K)	SSW and NSW	same as above	Erickson, et al (1978), AMIC-449
CuCl2 2H2O (as Cu)	Dunaliella tertiolecta	L	--	450 (50 percent K)	SSW and NSW	same as above	Erickson, et al (1978), AMIC-449
CuCl2 2H2O (as Cu)	Isochrysis Galbana	L	--	Approx. 0.2 K)	SSW and NSW	same as above	Erickson, et al (1978), AMIC-449

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
CuCl2 2H20 (as Cu)	Monochrysis Lutheri	L	--	Approx. 0.5 (K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H20 (as Cu)	Nannochloris oculata	L	--	Approx. 0.5 (K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H20 (as Cu)	Nitzschia closterium	L	--	Approx. 0.05 (K)	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
CuCl2 2H20 (as Cu)	Olisthodiscus luteus	L	--	Approx. 0.05	SSM and NSW	same as above	Erickson, et al (1970), AMIC-449
Cunilate RG 24	Salmo gairdneri	BCFA and BSA	--	8.5 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Cunilate RG 24	Rasbora heteromorpha	BCFA and BSA	--	1.4 (T2, softwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, orseawater for some species	same as above	Alabaster (1969), AMIC-5425
Cunilate RG 24	Rasbora heteromorpha	BCFA and BSA	--	8.9 (T2, hardwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water,	same as above	Alabaster (1969), AMIC-5425

						orseawater for some species		
	Cupric ammonium sulfate (as Cu)	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental gains were found.	Otte (1978), AMIC-892
	Cupric chloramine	Phormidium ambiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	same as above	Otte (1978), AMIC-892
	Cupric sulfate	Salvelinus fontinalis (6-8 in.)	BCFA	--	0.038-0.069(SB 6 and 21)	a*,c,e,f,g	The seven blood characteristics of brook trout studied were red blood count, hematocrit, hemoglobin, plasma chloride, plasma glutamic oxalacetic transaminase, osmolarity, and total protein. Statistically significant changes were noted in 5 characteristics after 6 days. Measurable decrease in plasma glutamic oxalacetic transaminase was the only change noted after long-term exposure to lower concentrations. The authors state that fish blood study can be used as a measure of their physical condition and long-range forecasting of reproductive success and survival.	McKim, et al (1978), AMIC-3628
	Cupric sulfate	Salvelinus fontinalis (6-8 in.)	BCFCH	--	0.017-0.033(SB 337)	a*,c,e,f,g	same as above	McKim, et al (1978), AMIC-3628
	Cuprinol	Crangon crangon	BSA	--	3.3-10 (72)	ge(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Pom	Experimental Variables, Controlled or Noted	Comments	Reference
Cu, Ni, Cr, CN, and Zn	Pimephales promelas	BSACF (ML)	Grand River at Wyoming, Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni, Cu, Cr, CN, and Zn	A mobile bioassay unit was utilized to conduct this study of municipal wastewater containing the indicated toxicants. River water was used as diluent. The conclusion was reached that synergistic or additive toxic effects occurred since toxicity was greater than that of any of the ions singly.	Zillich (1969), AMIC-2986
Cu, Ni, Cr, CN, and Zn	Catostomus commersoni	BSACF (ML)	Grand River at Wyoming, Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni, Cu, Cr, CN, and Zn	same as above	Zillich (1969), AMIC-2986
CX	Fundulus heteroclitus	BSA	--	0.00051-0.00225 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, NH, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1978), AMIC-445
CX	Nereis virens	BSA	--	0.00078-0.0071 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al (1978), AMIC-445
Cyanides	Lepomis macrochirus	BSA	--	0.18	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5728

Cyanides	Physa heterostropha	BSA	--	0.432	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5728
Cycloheximide	Phormidium ambiguum	L	--	0.5-10.0 (66 percent growth inhibited)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
Dalecide	Rasbora heteromorpha	SCFA and BSA	--	628 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dalapon	Fish (not specified)	--	--	greater than 100-1000 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971), AMIC-1056
Dalapon	Rasbora heteromorpha	SCFA and BSA	--	greater than 500 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					species	pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Dalapon	Nasbora heteromorpha	BCFA and BSA	—	43 (TF, softwater)	s*,c,a,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Dalapon	Cardium edule	BSA	—	greater than 100 (TF)	ss(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Dalapon	Crangon crangon	BSA	—	greater than 100 (TF)	ss(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dalapon	Platichthys flesus	BSA	—	greater than 100 (TF)	ss(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
DDP	Palaemonetes kadiakensis	BCF	—	0.88 (residue)	s*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly.	Johnson, et al

							Biological magnification factors of 2980 to 114,180 depending on the species were found for DDT, and 22,488 to 141,866 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish food chain.	(1971),AMIC-3828
DBP		Palaemonetes, BCF Kadiakensis	--	0.0881 (583)	a*		same as above	Johnson,et al (1971), AMIC-3828
DDD (C-14 labelled)	Sorghum halpense	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand		This small laboratory model ecosystem procedure was developed to study pesticide biodegradability and ecological magnification. The food-chain pathways in this system were: (1) sorghum - caterpillar (larva), (2) caterpillar (excreta) - Oedogonium, (3) Oedogonium - snail, (4) Euglenene (excreta) - diatoms, (5) Diatoms - plankton, (6) Plankton - Culex (larvae), (7) Culex - Gambusia. The fish is the top of the food chain. Using isotopically labeled pesticides (1 lb/acre application rate), residues were determined for only selected organisms (snail, mosquito, and fish) and water. Reproducibility appeared to be good. The authors state that the method gives a good estimation of the potential toxicity of pesticides and their breakdown products to a variety of organisms and is suitable for computer modeling.	Metcalf, et al (1971), AMIC-1495
DDD (C-14 labelled)	Euglenene acres	L (Model ecosystem)	--	1 lb per A (K-NTE)	a,c,g, standard reference water and sand		same as above	Metcalf, et al (1971), AMIC-1495
DDD (C-14 labelled)	Physa spp	L (Model ecosystem)	--	9.6 (residue)	a,c,g, standard reference water and sand		same as above	Metcalf, et al (1971), AMIC-1495

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDD (C-14 labelled)	Daphnia magna	L (Model ecosystem)	--	1 lb per A (E-NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDD (C-14 labelled)	Culex pipiens quinquefasciatus	L (Model ecosystem)	--	9.8(residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDD (C-14 labelled)	Dedogonium cardiacum	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDD (C-14 labelled)	Gambusia affinis	L (Model ecosystem)	--	39.1 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDD (C-14 labelled)	Diatoms (Navicula, Cosainodiscus, Dipleness, and Diatomella)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf,et al (1971), ANIC-1495
DDD (C-14 labelled)	Protozoa (Euclearia, Coleps, Verticella, and Paramecium)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDD (C-14 labelled)	Rotifers (Asplanchnopus, Notomatta, Euclaris, Scardium)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971),ANIC-1495

DDD-(C-14 labelled)	Water	Σ (Model ecosystem)	--	0.006 (residue)	E.P.A. standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1499
DDD (p,p')	Anguilla rostrata	FRL	St. John, N.B., Can.	0.19 (residue)	--	PCB's were found in higher concentrations than organochlorine pesticides in all fish analyzed. The authors point out that PCB is less toxic in an acute sense than organochlorines, that little is known of sublethal PCB effects, and that more knowledge of PCB distribution and effects is needed.	Zitko(1971), ANIC-3715
DDD (p,p')	Esox niger	FRL	St. John, N.B., Can.	0.03 (residue)	--	same as above	Zitko (1971), ANIC-3715
DDD (p,p')	Salmo salar	FRL	St. John, N.B., Can.	0.07 (residue)	--	same as above	Zitko (1971), ANIC-3715
DDD (p,p')	Clupea harengus	FRL	St. John, N.B., Can.	0.01-0.04 (residue)	--	same as above	Zitko(1971), ANIC-3715
DDD (p,p')	Scomber scombrus	FRL	St. John, N.B., Can.	0.02 (residue)	--	same as above	Zitko(1971), ANIC-3715
DDD	Limnephilus rhombicus (larvae)	FS	Knights Creek, Dun County, Misc.	0.007(whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in 1963-1965 with various chlorinated hydrocarbon pesticides. No residues were found in water samples. Silt samples contained 0.002-0.013 ppm endrin and 0-0.005 ppm dieldrin. Endrin residues of 0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	Maubry, et al (1968), ANIC-3753

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDD	Rhinichthys stratulus	FS	Knights Creek, Dun County, Misc.	0.78 (fat residue)	--	same as above	Neubry, et al (1968), AMIC-3793
DDD	Gasterus sp.	FS	Knights Creek, Dun County, Misc.	0.887 (whole bodyresidue) residue)	--	same as above	Neubry, et al (1968), AMIC-3793
DDD	Salvelinus fontinalis	FS	Knights Creek, Dun County, Misc.	0.26-1.84 (fat residue)	--	same as above	Neubry, et al (1968), AMIC-3793
DDD	Semotilus atromaculatus	FS	Knights Creek, Dun County, Misc.	0.53-0.67(fat residue)	--	same as above	Neubry, et al (1968), AMIC-3793
DDD	Cottus bairdi	FS	Knights Creek, Dun County, Misc.	0.4-0.47 (fat residue)	--	same as above	Neubry, et al (1968), AMIC-3793
DDD	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Misc.	0.883 (wholebody residue)	--	same as above	Neubry, et al (1968), AMIC-3793
DDD	Carassius auratus	L	--	0.1-0.8 (residue)	s*	Goldfish were exposed to increasing concentrations of DDT and residues determined after 21 days of exposure. Most DDT had been converted to DDE. Phenobarital had no significant effect on insecticide residues.	Young, etal (1971), AMIC-3796
DDD	Daphnia magna (adult)	BCF	--	0.6 (residue)	s*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly. Biological magnification factors of 2900 to 114,100 depending on the species were found for DDT, and 22,800 to 141,000 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish food chain.	Johnsen, et al (1971), AMIC-3828

DDD	Palaemonetes kadiakensis (adult)	BCF	--	0.04 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3828
DDD	Daphnia magna (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3828
DDD	Palaemonetes Kadiakensis (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3828
DDD	Archoplites interruptus	FL	Clear Lake, Cal.	315 (flesh residue)	--	Residue analysis results mainly for TDE in fish, birds, and plankton from 1959 through 1969 were reported. The residues primarily resulted from application of DDT to farmland and for gnat control. In some cases, data for a single animal in one year were given. Primary emphasis was on largemouth bass and white catfish. The general level of TDE contamination in birds and fish declined markedly from 1958 to 1969. This decline correlated directly with strict limitation by permits of DDT applications during the latter years.	Linn, et al (1969), AMIC-9921
DDD	Orthodon microlepidotus	FL	Clear Lake, Cal.	0.5-7.0 (flesh residue)	--	same as above	Linn, et al (1969), AMIC-9921
DDD	Pomoxis nigromaculatus	FL	Clear Lake, Cal.	10-24 (flesh residue)	--	same as above	Linn, et al (1969), AMIC-9921
DDD	Aechmophorus occidentalis	FL	Clear Lake, Cal.	16-2,000 (fat residue)	--	same as above	Linn, et al (1969), AMIC-9921
DDD	Bucephala clangula	FL	Clear Lake, Cal.	132 (fat residue)	--	same as above	Linn, et al (1969), AMIC-9921
DDD	Larus spp.	FL	Clear Lake, Cal.	68-2,134 (fat residue)	--	same as above	Linn, et al (1969), AMIC-9921
DDD	Larus delawarensis	FL	Clear Lake, Cal.	100-1,020 (fat residue)	--	same as above	Linn, et al (1969), AMIC-9921
DDD	Mergus merganser	FL	Clear Lake, Cal.	greater than 8-80 (fat residue)	--	same as above	Linn, et al (1969), AMIC-9921
DDD	Plankton	FL	Clear Lake, Cal.	10.9 (residue)	--	same as above	Linn, et al (1969), AMIC-9921

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDD	Archoplites interruptus	FL	Clear Lake, Cal.	3,972 (fat residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDD	Ictalurus catus	FL	Clear Lake, Cal.	1.3-184 (flesh residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDD	Ictalurus catus	FL	Clear Lake, Cal.	228-2,358 (fat residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDD	Lavinia exilicauda	FL	Clear Lake, Cal.	less than 1-2 (flesh residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDD	Lepomis cyanellus	FL	Clear Lake, Cal.	2 (flesh residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDD	Lepomis cyanellus	FL	Clear Lake, Cal.	183 (fat residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDD	Micropterus salmoides	FL	Clear Lake, Cal.	0.2-111 (flesh residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDD	Micropterus salmoides	FL	Clear Lake, Cal.	28-437 (fat residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDD	Perca flavescens	FLR	93 sampling stations in Mass.	0.24-5.7 (residue)	--	Fish indigenous to Massachusetts freshwater streams were analyzed for DDT and DDT metabolites during 1965-1967. Generally there was an increase in pesticide content during the three year period.	Lyman, et al (1968), AMIC-3839
DDD	Lepomis	FLR	93 sampling	0-6.7	--	same as above	Lyman, et al

	gibbosus		stations in Mass.	(residue)			(1968), AMIC-3039
000	Catostomus commersoni	FLR	93 sampling stations in Mass.	0.03-12.5 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Ictalurus nebulosus	FLR	93 sampling stations in Mass.	1.2 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Cyprinus carpio	FLR	93 sampling stations in Mass.	0.24-1.9 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Esox niger	FLR	93 sampling stations in Mass.	0.38 (residue)	--	same as above	Lyman, et al (1969), AMIC-3039
000	Notemigonus crysoleucas	FLR	93 sampling stations in Mass.	0.15-2.7 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Semotilus corporalis	FLR	93 sampling stations in Mass.	0.07-4.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Lepomis macrochirus	FLR	93 sampling stations in Mass.	0.48-2.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Ambloplites rupestris	FLR	93 sampling stations in Mass.	0.38-18.8 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Semotilus atromaculatus	FLR	93 sampling stations in Mass.	0.18-0.64 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Micropterus dolomieui	FLR	93 sampling stations in Mass.	0.28-0.58 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Alosa pseudo-harengus	FLR	93 sampling stations in Mass.	0.88 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Fundulus heteroclitus	FLR	93 sampling stations in Mass.	1.7-3.6 (residue)	--	same as above	Lyman, et al (1968), AMIC-3039
000	Notropis	FLR	93 sampling	0.8-2.8	--	same as above	Lyman, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	cornutus		stations in Mass.	(residue)			(1968), AMIC-3639
DDD	Roccus americanus	FLR	93 sampling stations in Mass.	0.4-1.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3639
DDD	Pomoxis nigro-maculatus	FLR	93 sampling stations in Mass.	18.7(residue)	--	same as above	Lyman, et al (1968), AMIC-3639
DDD	Lepomis auritus	FLR	93 sampling stations in Mass.	0.46 (residue)	--	same as above	Lyman, et al (1968), AMIC-3639
DDD	Rhinichthys atratulus	FLR	93 sampling stations in Mass.	0.48 (residue)	--	same as above	Lyman, et al (1968), AMIC-3639
DDD	Cyprinus carpio	FR	St. Lawrence River, Montreal, Canada	0.38(0.48 ppm max tissue residue)	--	Residues of DDD were measured in water, mud, molluscs, and fish during and after DDD application in 1967. Sampling points were above the point of application and 10 and 45 mi downstream. Residues from unknown sources were detected upstream. Downstream residues were more than twice those obtained upstream (0.156 versus 0.369 ppm). The highest concentration in an individual fish was 1.81 ppm.	Fredeen, et al (1978), AMIC-934
DDD	Catostomus commersoni	FR	St. Lawrence River, Montreal, Canada	0.38(0.48 ppm max tissue residue)	--	same as above	Fredeen, et al (1978), AMIC-934
DDD	Ameiurus nebulosus	FR	St. Lawrence River, Montreal, Canada	0.38(0.55 ppm max tissue residue)	--	same as above	Fredeen, et al (1978), AMIC-934
DDD	Perca flavescens	FR	St. Lawrence River, Montreal, Canada	0.38 (0.44ppm max tissue residue)	--	same as above	Fredeen, et al (1978), AMIC-934

DDD	Esox lucius	FR	St. Lawrence River, Montreal, Canada	8.38 (1.31 ppmmax tissue residue)	--	same as above	Fredeen, et al (1978), AMIC-534
DDD	Ambloplites rupestris	FR	St. Lawrence River, Montreal, Canada	8.38(8.25 ppm max tissue residue)	--	same as above	Fredeen, et al (1978), AMIC-534
DDD	Pisidium sp.	FR	St. Lawrence River, Montreal, Canada	8.38 (8.881ppm max tissue residue)	--	same as above	Fredeen, et al (1978), AMIC-534
DDD	Caspetosa sp.	FR	St. Lawrence River, Montreal, Canada	8.38 (8.22ppm max tissue residue)	--	same as above	Fredeen, et al (1978), AMIC-534
DDE (C-14 labelled)	Sorghum halpense	L (Model ecosystem)	--	1 lb per A (NTE)	s.c.g. standard reference water and sand	This small laboratory model ecosystem procedure was developed to study pesticide biodegradability and ecological magnification. The food-chain pathways in this system were: (1) sorghum - caterpillar (larva), (2) caterpillar (excreta) - Oedogonium, (3) Oedogonium - snail, (4) Estigmene (excreta) - diatoms, (5) Diatoms - plankton, (6) Plankton - Culex (larvae), (7) Culex - Gambusia. The fish is the top of the food chain. Using isotopically labeled pesticides (1 lb/acre application rate), residues were determined for only selected organisms (snail, mosquito, and fish) and water. Reproducibility appeared to be good. The authors state that the method gives a good estimation of the potential toxicity of pesticides and their breakdown products to a variety of organisms and is suitable for computer modeling.	Metcalf, et al (1971), AMIC-1495
DDE (C-14 labelled)	Estigmene acrea	L (Model ecosystem)	--	1 lbper A (K-NTE)	s.c.g. standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDE (C-14 labelled)	Physa spp	L (Mod-	--	121.6 (residue)	s.c.g. standard	same as above	Metcalf, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
		al ecosystem)			reference water and sand		(1971), ANIC-1495
DDE (C-14 labelled)	Daphnia magna	L (Model ecosystem)	--	1 lb per A (K-NTE)	s,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDE (C-14 labelled)	Culex pipiens quinquefasciatus	L (Model ecosystem)	--	168.9(residue)	s,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDE (C-14 labelled)	Cadagenium cardiscum	L (Model ecosystem)	--	1 lb per A (NTE)	s,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDE (C-14 labelled)	Gambusia affinis	L (Model ecosystem)	--	149.8 (residue)	s,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDE (C-14 labelled)	Diatoms (Navicula, Coscinodiscus, Diplonese, and Diatomella)	L (Model ecosystem)	-	1 lb per A (NTE)	s,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDE (C-14 labelled)	Protozoa (Nuclearia, Coleps, Vorticella, and Paramecium)	L (Model ecosystem)	--	1 lb per A (NTE)	s,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495

DDE (C-14 labelled)	Rotifers (Asplanchnopus, Notomatta, Euclaris, Keardium)	L (Model ecosystem)	--	1 lb per A (NTE)	e.c.g. standard reference water and sand	same as above	Metcalf, et al(1971), AMIC-1495
DDE (C-14 labelled)	Water	L (Model ecosystem)	--	0.888 (residue)	e.g.g. standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDE (p,p")	Anguilla rostrata	FRL	St. John, N.B., Can.	0.5 (residue)	--	PCB"s were found in higher concentrations than organochlorine pesticides in all fish analyzed. The authors point out that PCB is less toxic in an acute sense than organochlorines, that little is known of sublethal PCB effects, and that more knowledge of PCB distribution and effects is needed.	Zitko(1971), AMIC-3715
DDE (p,p")	Esox niger	FRL	St. John, N.B., Can.	0.16 (residue)	--	same as above	Zitko (1971),AMIC-3715
DDE (p,p")	Salmo salar	FRL	St. John, N.B., Can.	0.22 (residue)	--	same as above	Zitko (1971),AMIC-3715
DDE (p,p")	Clupea harengus	FRL	St. John, N.B., Can.	0.06-0.24 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDE (p,p")	Scomber scombrus	FRL	St. John, N.B., Can.	0.07 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDE (p,p")	Mytilus edulis	FRL	St. John, N.B., Can.	0.07(residue)	--	same as above	Zitko (1971),AMIC-3715
DDE (p,p")	Gadus morhua	FRL	St. John, N.B., Can.	0.01 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDE (p,p")	Urophycis tenuis	FRL	St. John, N.B., Can.	0.02 (residue)	--	same as above	Zitko(1971), AMIC-3715
DDE (p,p")	Hippoglossoides platessoides	FRL	St. John, N.B., Can.	0.01 (residue)	--	same as above	Zitko (1971), AMIC-3715
DDE (p,p")	Sebastodes	FRL	St. John,	trace	--	same as above	Zitko(1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	serinus		N.M., Can.	(residue)			AMIC-3716
DDE	Carp	FRL	Misc. states	0.83-2.93 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487
DDE	Channel catfish	FRL	Misc. states	0.84-42.3 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487
DDE	Redhorse sucker	FRL	Misc. states	0.83-0.36 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487
DDE	Gizzard shad	FRL	Misc. states	0.27-1.94 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487
DDE	Spotted sucker	FRL	Misc. states	0.29-0.49 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487
DDE	Bluegills	FRL	Misc. states	0.04-0.81 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487
DDE	Redbreast sunfish	FRL	Misc. states	0.02 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487
DDE	Striped mullet	FRL	Misc. states	0.08-4.95 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487
DDE	Blue catfish	FRL	Misc. states	1.87 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487
DDE	Rock bass	FRL	Misc. states	0.08-0.68 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487
DDE	Freshwater drum	FRL	Misc. states	0.26 residue (SS)	--	same as above	Henderson, et al (1971), AMIC-1487

DDE	Bloater	FRL	Misc. states	1.87-3.52 residue (SB)	--	same as above	Henderson et al(1971), AMIC-1487
DDE	Lake whitefish	FRL	Misc. states	0.34 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
DDE	Lake trout	FRL	Misc. states	0.84-0.98 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
DDE	White crappie	FRL	Misc. states	0.03-0.23 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDE	Bigmouth buffalo	FRL	Misc. states	0.15-0.62 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDE	Smallmouth buffalo	FRL	Misc. states	0.46 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDE	Flathead catfish	FRL	Misc. states	0.82 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
DDE	Goldeye	FRL	Misc. states	0.03-0.29 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
DDE	Walleye	FRL	Misc. states	0.05 residue (SB)	--	same as above	Henderson, et al (1971),AMIC-1487
DDE	Sauger	FRL	Misc. states	0.38 residue (SB)	--	same as above	Henderson,et al(1971), AMIC-1487
DDE	Flannelmouth sucker	FRL	Misc. states	0.13 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDE	Black bullhead	FRL	Misc. states	0.03-0.04 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDE	White bass	FRL	Misc. states	0.13 residue (SB)	--	same as above	Henderson, et al(1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDE	Black crappie	FRL	Misc. states	0.48-0.94 residue (SB)	--	same as above	AMIC-1487 Henderson,et al (1971), AMIC-1487
DDE	Largescale sucker	FRL	Misc. states	0.12-0.47 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDE	Smallmouth bass	FRL	Misc. states	0.38-0.94 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDE	Northern squawfish	FRL	Misc. states	0.48-1.87 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDE	Chiselmouth	FRL	Misc. states	0.14-0.78 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
DDE	Klamath sucker	FRL	Misc. states	0.82 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
DDE	Rainbow trout	FRL	Misc. states	0.88-0.58 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDE	Bridgelip sucker	FRL	Misc. states	0.35 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDE	Arctic grayling	FRL	Misc. states	0.25 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
DDE	Pound whitefish	FRL	Misc. states	0.27 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
DDE	Longnose sucker	FRL	Misc. states	0.81-0.94 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487

DDE	White sucker	FRL	Misc. states	0.89-4.82 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB's.	Henderson, et al (1971), ANIC-1487
DDE	Yellow perch	FRL	Misc. states	0.83-2.41 residue (SB)	--	same as above	Henderson, et al (1971), ANIC-1487
DDE	Chain pickerel	FRL	Misc. states	0.86 residue (SB)	--	same as above	Henderson, et al (1971), ANIC-1487
DDE	White catfish	FRL	Misc. states	0.38-0.86 residue (SB)	--	same as above	Henderson, et al (1971), ANIC-1487
DDE	White perch	FRL	Misc. states	0.64-18.9 residue (SB)	--	same as above	Henderson, et al (1971), ANIC-1487
DDE	Goldfish	FRL	Misc. states	1.24 residue (SB)	--	same as above	Henderson, et al (1971), ANIC-1487
DDE	Pumpkinseed	FRL	Misc. states	0.23 residue (SB)	--	same as above	Henderson, et al (1971), ANIC-1487
DDE	Largemouth bass	FRL	Misc. states	0.18-5.85 residue (SB)	--	same as above	Henderson, et al (1971), ANIC-1487
DDE	Brown bullhead	FRL	Misc. states	0.84-1.65 residue (SB)	--	same as above	Henderson, et al (1971), ANIC-1487
DDE	Lisnophilus rhombicus (larvae)	FS	Knights Creek, Dun County, Misc.	0.886 (whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in 1963-1965 with various chlorinated hydrocarbon pesticides. No residues were found in water samples. Silt samples contained 0.882-0.013 ppm endrin and 0-0.885 ppm dieldrin. Endrin residues of	Maubry, et al (1968), ANIC-3753

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	
DDE	Simlia sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.005 (wholebody residue)	--	same as above	Woubry, et al (1968), AMIC-3793
DDE	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.01(whole bodyresidue) residue)	--	same as above	Woubry, et al (1968), AMIC-3793
DDE	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.3-1.4(fat residue)	--	same as above	Woubry, et al (1968), AMIC-3793
DDE	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	1.02-1.53(fat residue)	--	same as above	Woubry, et al (1968), AMIC-3793
DDE	Cottus bairdi	FS	Knights Creek, Dun County, Wisc.	0.6-0.7 (fat residue)	--	same as above	Woubry, et al (1968), AMIC-3793
DDE	Rhinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	1.92(fat residue)	--	same as above	Woubry, et al (1968), AMIC-3793
DDE	Engraulis mordax	FM	Pacific Northwest Coast, Grays Harbor, Wash.	0.06-0.17(residue)	--	Pesticides from the Columbia River into Puget Sound apparently contaminated fish constituting commercial catches in Pacific Northwest waters. Residues in these marine products were substantially lower than the FDA tolerance for beef (7 ppm). Fish from locations near the mouth of the Columbia River had higher pesticide content than ones caught farther away.	Stout (1968), AMIC-3784

			Wash.				
DDE	Sebastodes flavidus	FH	Pacific Northwest Coast, Neeate Strait, B.C.	0.02-0.04 (residue)	--	same as above	Stout (1968), ANIC-3784
DDE	Sebastodes flavidus	FH	Pacific Northwest Coast, Tiwaco, Wash.	0.02-0.42 (residue)	--	same as above	Stout (1968), ANIC-3784
DDE	Platichthys stellatus	FH	Pacific Northwest Coast, Blaine, Wash.	0.02(residue)	--	same as above	Stout (1968), ANIC-3784
DDE	Gadus macrocephalus	FH	Pacific Northwest Coast, Blaine.	0.01 (residue)	--	same as above	Stout (1968), ANIC-3784
DDE	Cancer magister	FH	Pacific Northwest Coast, Destruction Island, Wash.	0.039(residue)	--	same as above	Stout (1968), ANIC-3784
DDE	Cancer magister	FH	Pacific Northwest Coast, Tiwaco, Wash.	0.03-0.04 (residue)	--	same as above	Stout (1968), ANIC-3784
DDE	Parophrys vetulus	FH	Pacific Northwest Coast, Blaine, Wash.	0.01-0.09 (residue)	--	same as above	Stout (1968), ANIC-3784
DDE	Hericulus productus	FH	Pacific Northwest Coast, Sarasota Passage, Wash.	0.04-0.06 (residue)	--	same as above	Stout (1968), ANIC-3784
DDE	Hericulus productus	FH	Pacific Northwest	0.04-0.11 (residue)	--	same as above	Stout (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Coast, Fort Susan, Wash.				AMIC-3784
DDE	Mariuccius productus	FN	Pacific Northwest Coast, Cape Foulweather, Ore.	0.87(residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Mariuccius productus (fishmeal)	FN	Pacific Northwest Coast, Aberdeen, Wash.	0.27 (residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Sebastodes alutus	FN	Pacific Northwest Coast, Hecate Strait, B.C.	0.01 (residue)	--	same as above	Stout (1968), AMIC-3784
DDE	Carassius auratus	L	--	4.7-8.2 (residue)	a*	Goldfish were exposed to increasing concentrations of DDT and residues determined after 21 days of exposure. Most DDT had been converted to DDE. Phenobarital had no significant effect on insecticide residues.	Young, etal (1971), AMIC-3786
DDE	Triturus cristatus	L	--	0.23-0.64 (residue)	--	DDT caused hyperactivity in exposed tadpoles. This caused increased capture lunges of newts thus increasing the predatory efficiency of the newts. DDT had no apparent effect on the newts.	Cooke (1971), AMIC-3814
DDE	Rana temporaria	L	--	0.001-0.01 microgram (residue)	--	same as above	Cooke (1971), AMIC-3814
DDE	Daphnia magna (adult)	BCF	--	1.8 (residue)	a*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly. Biological magnification factors of 2988 to 114,188 depending on the species were found for DDT, and 22,888 to 141,888 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors	Johnson, et al (1971), AMIC-3828

							conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish food chain.	
30E		Gammarus fasciatus (adult)	BCF	--	0.4 (residue)	a*	same as above	Johnson, et al (1971), ANIC-3820
30E		Palaemonetes kadiakensis (adult)	BCF	--	0.7 (residue)	a*	same as above	Johnson, et al (1971), ANIC-3820
30E		Hexagenia bilineata (nymph)	BCF	--	1.4 (residue)	a*	same as above	Johnson, et al (1971), ANIC-3820
30E		Ischnura verticalis (naiad)	BCF	--	0.2 (residue)	a*	same as above	Johnson, et al (1971), ANIC-3820
30E		Libellula sp. (naiad)	BCF	--	0.02 (residue)	a*	same as above	Johnson, et al (1971), ANIC-3820
30E		Chironomus sp. (larva)	BCF	--	0.1 (residue)	a*	same as above	Johnson, et al (1971), ANIC-3820
30E		Daphnia magna (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), ANIC-3820
30E		Gammarus fasciatus (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), ANIC-3820
30E		Palaemonetes kadiakensis (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), ANIC-3820
30E		Hexagenia bilineata (nymph)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), ANIC-3820
30E		Ischnura verticalis (naiad)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), ANIC-3820

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDE	Libellula sp. (naiad)	SCF	--	0.0001 (SS3)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDE	Chironomus sp. (larva)	SCF	--	0.0001 (SS3)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDE	Micropterus salmoides	FL	Clear Lake, Cal.	0.3-9 (flesh residue)	--	Residue analysis results mainly for TDE in fish, birds, and plankton from 1949 through 1965 were reported. The residues primarily resulted from application of DDT to farmland and for gnat control. In some cases, data for a single animal in one year were given. Primary emphasis was on largemouth bass and white catfish. The general level of TDE contamination in birds and fish declined markedly from 1958 to 1965. This decline correlated directly with strict limitation by permits of DDT applications during the latter years.	Linn, et AL(1969), AMIC-5521
DDE	Micropterus salmoides	FL	Clear Lake, Cal.	82 (fat residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDE	Aechaspherus occidentalis	FL	Clear Lake, Cal.	33-2,368 (fat residue)	--	same as above	Linn, et AL(1969), AMIC-5521
DDE	Larus spp.	FL	Clear Lake, Cal.	388-482 (residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDE	Larus delawarensis	FL	Clear Lake, Cal.	92-2788 (fat residue)	--	same as above	Linn, et al (1969), AMIC-5521
DDE	Perca flavescens	FLR	93 sampling stations in Mass.	0.25-3.6 (residue)	--	Fish indigenous to Massachusetts freshwater streams were analyzed for DDT and DDT metabolites during 1965-1967. Generally there was an increase in pesticide content during the three year period.	Lyman, et al (1968), AMIC-3939

DDE	Lepomis gibbosus	FLR	93 sampling stations in Mass.	0.16-3.5 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Catostomus commersoni	FLR	93 sampling stations in Mass.	0.16-4.6 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Ictalurus nebulosus	FLR	93 sampling stations in Mass.	0.9 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Cyprinus carpio	FLR	93 sampling stations in Mass.	1.6-4.8 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Esox niger	FLR	93 sampling stations in Mass.	0.84-1.8 (residue)	--	same as above	Lyman,et al (1968), AMIC-3839
DDE	Notemigonus crysoleucas	FLR	93 sampling stations in Mass.	0.39-4.2 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Semotilus corporalis	FLR	93 sampling stations in Mass.	0.17-7.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Lepomis macrochirus	FLR	93 sampling stations in Mass.	0.18-4.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Ambloplites rupestris	FLR	93 sampling stations in Mass.	0.76-4.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Semotilus atromaculatus	FLR	93 sampling stations in Mass.	0.46-2.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Micropterus dolomieui	FLR	93 sampling stations in Mass.	0.3-0.82 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Alosa pseudo-harengus	FLR	93 sampling stations in Mass.	1.08 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDE	Fundulus heteroclitus	FLR	93 sampling stations in Mass.	1.16-4.1 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDE	Notropis cornutus	FLR	93 sampling stations in Mass.	0.98-2.6 (residue)	--	same as above	Lyman, et al (1968), AMIC-1839
DDE	Percus americanus	FLR	93 sampling stations in Mass.	0.34-1.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-1839
DDE	Pomoxis nigro-maculatus	FLR	93 sampling stations in Mass.	1.94(residue)	--	same as above	Lyman, et al (1968), AMIC-1839
DDE	Fundulus diaphanu	FLR	93 sampling stations in Mass.	2.35 (residue)	--	same as above	Lyman, et al (1968), AMIC-1839
DDE	Notropis anatostanus	FLR	93 sampling stations in Mass.	0.93 (residue)	--	same as above	Lyman, et al (1968), AMIC-1839
DDE	Lepomis auritus	FLR	93 sampling stations in Mass.	0.46 (residue)	--	same as above	Lyman,et al (1968), AMIC-1839
DDE	Rhinichthys atratulus	FLR	93 sampling stations in Mass.	0.48-0.98 (residue)	--	same as above	Lyman, et al (1968), AMIC-1839
DDE	Cyprinus carpio	FR	St. Lawrence River, Montreal, Canada	0.38(0.32 ppm max tissue residue)	--	Residues of DDD were measured in water, mud, molluscs, and fish during and after DDD application in 1967. Sampling points were above the point of application and 18 and 45 mi downstream. Residues from unknown sources were detected upstream. Downstream residues were more than twice those obtained upstream (0.196 versus 0.369 ppm). The highest concentration in an individual fish was 1.81 ppm.	Fredeen, et al (1970), AMIC-534
DDE	Ameiurus nebulosus	FR	St. Lawrence River, Montreal, Canada	0.38(0.12 ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDE	Perca flavescens	FR	St. Lawrence River, Montreal, Canada	0.38 (0.01ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534

DDE	Esox lucius	FR	St. Lawrence River, Montreal, Canada	0.38 (0.43 ppmax tissue residue)	--	same as above	Fredeen, et al (1978). AMIC-534
DDE	Ambloplites rupestris	FR	St. Lawrence River, Montreal, Canada	0.38(0.85 ppm max tissue residue)	--	same as above	Fredeen, et al (1978),AMIC-534
DDE	Pisidium sp.	FR	St. Lawrence River, Montreal, Canada	0.38 (0.84ppm max tissue residu)	--	same as above	Fredeen, et al (1978). AMIC-534
DDE	Campeloma sp.	FR	St. Lawrence River, Montreal, Canada	0.38 (0.89ppm max tissue residue)	--	same as above	Fredeen, et al (1978). AMIC-534
DDE	Catostomus commersoni	FR	St. Lawrence River, Montreal, Canada	0.38(0.32 ppm max tissue residue)	--	same as above	Fredeen, et al (1978),AMIC-534
DDT (C-14 labelled)	Daphnia magna (adult)	BCF	--	6.7-9.2 (residue)	a*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly. Biological magnification factors of 2988 to 114,188 depending on the species were found for DDT, and 22,888 to 141,888 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish food chain.	Johnson, et al (1971). AMIC-3828
DDT (C-14 labelled)	Culex pipiens (larva)	BCF	--	13.9 (residue)	a*	same as above	Johnson,et al (1971). AMIC-3828
DDT (C-14 labelled)	Daphnia magna (adult)	BCF	--	0.0001 (583)	a*	same as above	Johnson,et al (1971). AMIC-3828
DDT (C-14 labelled)	Gammarus fasciatus (adult)	BCF	--	0.0001 (583)	a*	same as above	Johnson,et al (1971). AMIC-3828
DDT (C-14 labelled)	Orconectes nais (adult)	BCF	--	0.0001 (583)	a*	same as above	Johnson,et al (1971). AMIC-3828
DDT (C-14 labelled)	Paisaeonetes kadiakensis (adult)	BCF	--	0.0001 (583)	a*	same as above	Johnson, et al (1971). AMIC-3828
DDT (C-14 labelled)	Hexagenia bilineata	BCF	--	0.0001(583)	a*	same as above	Johnson,et al (1971).

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(nymph)						AMIC-3820
DDT (C-14 labelled)	Siphlenurus sp (nymph)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Ischnura verticalis (naiad)	BCF	--	0.0001(SB3)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Libellula sp. (naiad)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Chironomus sp. (larva)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Culex pipiens (larva)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Gammarus fasciatus (adult)	BCF	--	1.3-1.7 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Orconectes nais (adult)	BCF	--	0.2 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820
DDT (C-14 labelled)	Palaemonetes kadiakensis (adult)	BCF	--	0.3-0.9 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3820

DDT (C-14 labelled)	Hexagenia bilineata (nymph)	BCF	--	0.3-1.7 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3828
DDT (C-14 labelled)	Siphlenurus sp. (nymph)	BCF	--	1.1 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3828
DDT (C-14 labelled)	Ischnura verticalis (naiad)	BCF	--	0.2-0.4 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3828
DDT (C-14 labelled)	Libellula sp. (naiad)	BCF	--	0.04-0.1 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3828
DDT (C-14 labelled)	Chironomus sp. (larva)	BCF	--	0.4-2.2 (residue)	a*	same as above	Johnson, et al (1971), AMIC-3828
DDT (C-14 labelled)	Estigaena acres	L (Model ecosystem)	--	1 lbper A (K-NTE)	a,c,g, standard reference water and sand	This small laboratory model ecosystem procedure was developed to study pesticide biodegradability and ecological magnification. The food-chain pathways in this system were: (1) sorghus - caterpillar (larva), (2) caterpillar (excreta) - Oedogenium, (3) Oedogenium - snail, (4) Estigmene (excreta) - diatoms, (5) Diatoms - plankton, (6) Plankton - Culex (larvae), (7) Culex - Gambusia. The fish is the top of the food chain. Using isotopically labeled pesticides (1 lb/acre application rate), residues were determined for only selected organisms (snail, mosquito, and fish) and water. Reproducibility appeared to be good. The authors state that the method gives a good estimation of the potential toxicity of pesticides and their breakdown products to a variety of organisms and is suitable for computer modeling.	Metcalf, et al (1971), AMIC-1495

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT (C-14 labelled)	Protozoa (Nuclearia, Colepa, Vorticella, and Paramecium)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDT (C-14 labelled)	Rotifers (Asplanchnopus, Notomatta, Euclaris, Scardium)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al(1971), ANIC-1495
DDT (C-14 labelled)	Water	L (Model ecosystem)	--	0.004 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDT (C-14 labelled)	Physa spp	L (Model ecosystem)	--	22.9 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDT (C-14 labelled)	Daphnia magna	L (Model ecosystem)	--	1 lb per A (K-NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDT (C-14 labelled)	Culex pipiens quinquefasciatus	L (Model ecosystem)	--	8.9(residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
DDT (C-14 labelled)	Gedegonius cardiacus	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al(1971), ANIC-1495
DDT (C-14 labelled)	Gambusia affinis	L (Model ecosystem)	--	54.2 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495

DDT (C-14 labelled)	Diatoms (Navicula, Cosinodiscus, Diploness, and Diatomella)	L (Model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
DDT (C-14 labelled)	Salvelinus fontinalis	BCFCH	--	0.000883 (0.0256ppm accumulation 120 d)	a	This study was an attempt to evaluate, under laboratory conditions, the relative importance of food and water as sources of DDT for fish and to relate these observations to natural environments. To simulate conditions in Lake Michigan, fish were exposed to water containing 3 plus or minus 0.3 ppt DDT, and others were fed 3 plus or minus 0.15 ppm DDT (0.045 mg/kg/day) for 120 days. Whole body accumulations were determined throughout the test by measuring C-14 radioactivity in fish. The results show that fish accumulated 3.5 percent of the DDT available in the water and 35.5 percent of that available in food. It is concludd that the food chain is the major source of DDT in fish.	Macek, et al (1970), AMIC-844
DDT (C-14 labelled)	Salvelinus fontinalis	BCFCH	--	0.045 mg per kg (1.92ppm accumulation 120 d)	a	same as above	Macek, et al (1970), AMIC-844
DDT (o,p')	Rasbora heteromorpha	BCFA and BSA	--	0.03 (T1)	a',c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
DDT (plus DDT analogs)	Limnephilus rhombicus (larvae)	FS	Knights Creek, Dun County, Wisc.	0.824 (whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in 1963-1965 with various chlorinated hydrocarbon pesticides. No residues were	Maubry, et al (1968), AMIC-3753

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						found in water samples. Silt samples contained 0.007-0.013 ppm endrin and 0-0.005 ppm dieldrin. Endrin residues of 0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	
DDT (plus DDT analogs)	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.016 (whole body residue)	--	same as above	Maubry, et al(1968), AMIC-3753
DDT (plus DDT analogs)	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.003-0.013 (whole body residue)	--	same as above	Maubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.042-0.155 (whole body residue)	--	same as above	Maubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	0.061-0.076 (whole body residue)	--	same as above	Maubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Cottus bairdi	FS	Knights Creek, DunCounty, Wisc.	0.034-0.062 (whole body residue)	--	same as above	Maubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Phinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	0.168 (whole body residue)	--	same as above	Maubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.92-3.87 (fat residue)	--	same as above	Maubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	1.81-2.36 (fat residue)	--	same as above	Maubry, et al (1968), AMIC-3753
DDT (plus DDT analogs)	Cottus bairdi	FS	Knights Creek,	1.53-2.58 (fat residue)	--	same as above	Maubry, et al (1968),

			DunCounty, Wisc.				
DDT (plus DDT analogs)	Phinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	2.8 (fat residue)	--	same as above	Newbry, et al (1968), AMIC-3753
DDT (plus 20 percent non-ionic emulsifier, 60 percent naphtha)	Rasbora heteromorpha	BCFA and BSA	--	0.11 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
DDT (plus 20 percent non-ionic emulsifier, 60 percent naphtha, in acetone)	Rasbora heteromorpha	BCFA and BSA	--	0.02 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT (plus 24 percent suspending agents)	Rasbora heteromorpha	BCFA and BSA	--	10.7 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT (plus 3 percent emulsifier, 45 percent naphtha)	Rasbora heteromorpha	BCFA and BSA	--	0.11 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT (plus 77 percent China clay, 3 percent calcium sulfate)	Rasbora heteromorpha	BCFA and BSA	—	0.0 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT (plus 77 percent China clay, 3 percent calcium sulfate, in ACETONE)	Rasbora heteromorpha	BCFA and BSA	—	0.001 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
DDT (p,p'-)	Pimephales promelas (3 cm)	BSA	—	0.0074 (T2)	a*,c,e,f,k,l,n,and magnesium, sulfates, iron, calcium	Bioassays conducted simultaneously indicated that DDT was considerably more toxic to fathead minnows under static conditions than under continuous flow conditions. Decreasing oxygen and increasing metabolites may have enhanced DDT toxicity. An identical study with Endrin resulted in only slightly higher toxicity under continuous flow conditions. Average pH, oxygen, and ammonia nitrogen were followed throughout the experiments. The results were comprehensively discussed taking into consideration many contributing factors.	Lincer, et al (1978), AMIC-5589
DDT (p,p'-)	Pimephales promelas (3 cm)	BCFA	—	greater than 0.04 (T2)	a*,c,e,f,k,l,n,and magnesium, sulfates, iron,	same as above	Lincer, et al (1978), AMIC-5589

					calcium		
DDT (o,p")	Anguilla rostrata	FRL	St. John, N.B., Can.	0.29 (residue)	--	PCB's were found in higher concentrations than organochlorine pesticides in all fish analyzed. The authors point out that PCB is less toxic in an acute sense than organochlorines, that little is known of sublethal PCB effects, and that more knowledge of PCB distribution and effects is needed.	Zitko(1971), AMIC-3719
DDT (o,p")	Esox niger	FRL	St. John, N.B., Can.	0.08 (residue)	--	same as above	Zitko (1971),AMIC-3719
DDT (o,p")	Salmo salar	FRL	St. John, N.B., Can.	0.08 (residue)	--	same as above	Zitko (1971),AMIC-3719
DDT (o,p")	Clupea harengus	FRL	St. John, N.B., Can.	0.05-0.15 (residue)	--	same as above	Zitko(1971), AMIC-3719
DDT (o,p")	Scomber scombrus	FRL	St. John, N.B., Can.	0.07 (residue)	--	same as above	Zitko(1971), AMIC-3719
DDT (o,p")	Rasbora heteromorpha	BCFA and USA	--	0.013 (TL)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
DDT (o,p", C-14 labelled)	Gambusia affinis (0.1-1.5 g)	L	--	0.000041(BB2)	a*	DDT-resistant mosquitofish were collected from a pond at Salinas, California. Smaller fish (100 mg) accumulated DDT-C14 more rapidly than larger ones (200-1500 mg). In 48 hr the fish removed 91 percent of the DDT from the water. The author notes that other researchers attribute DDT contamination of fish to food chain uptake but that his results indicate direct uptake from water by smaller fish may be of considerable importance.	Murphy (1971), AMIC-1805

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT (p,p", C-14 labelled)	Gambusia affinis (0.1-1.9 g)	L	--	0.000041(0.01-0.04 ppm whole body residue 2 d)	a*	same as above	Murphy (1971), AHIC-1895
DDT (p,p", plus 20 percent o,p"DDT)	Rasbora heteromorpha	BCFAs and BSA	--	0.0031 (T2,hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AHIC-5429
DDT (p,p", plus 20 percent o,p"DDT)	Rasbora heteromorpha	BCFA and BSA	--	0.00854 (T2,softwater)	ap,c,e,f, hard (Hd) or soft (Sd) synthetic water, or seawater for some species	same as above	Alabaster (1969), AHIC-5429
DDT (p,p", plus 20 percent o,p"DDT)	Salmo trutta (alevin)	BCFA and BSA	--	0.0025 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AHIC-5429
DDT (p,p", plus 20 percent o,p"DDT)	Rasbora heteromorpha	BCFA and BSA	--	0.017 (T2)	a*,c,e,f, hard (HW) or soft (SW)	same as above	Alabaster (1969), AHIC-5429

						synthetic dilution water, or seawater for some species		
DDT (p,p", plus 20 percent o,p"DDT)	Salmo trutta (alevin)	ECFA and BSA	--		0.011 (TI)	a",c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AHIC-9429
DDT (18 percent)	Rasbora heteromorpha	ECFA and BSA	--		0.17 (TI)	a",c,e,f, hard (HW) orsoft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AHIC-9429
DDT	Fish (not specified)	--	--		greater than 0.0001-0.001 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdsley-Thomas(1971) AHIC-1856
DDT	White sucker	FRL	Misc. states		0.05-2.98 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 48 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, fipids, and PCB"s.	Henderson,et al (1971), AHIC-1487
DDT	Redhorse sucker	FRL	Misc. states		0.02-0.25 residue (SB)	--	same as above	Henderson,et al (1971), AHIC-1487
DDT	Gizzard shad	FRL	Misc. states		0.13-0.15 residue (SB)	--	same as above	Henderson, etal (1971), AHIC-1487
DDT	Spotted sucker	FRL	Misc. states		0.14 residue (SB)	--	same as above	Henderson, etal (1971), AHIC-1487

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Striped mullet	FRL	Misc. states	0.38-1.12 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487
DDT	Blue catfish	FRL	Misc. states	0.84 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487
DDT	Rock bass	FRL	Misc. states	0.86-0.49 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487
DDT	Freshwater drum	FRL	Misc. states	0.31 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487
DDT	Bluegill	FRL	Misc. states	0.59-1.08 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487
DDT	Lake whitefish	FRL	Misc. states	0.28 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487
DDT	Lake trout	FRL	Misc. states	0.83-0.45 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487
DDT	White crappie	FRL	Misc. states	0.89-0.28 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487
DDT	Bigmouth buffalo	FRL	Misc. states	0.11-0.51 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487
DDT	Smallmouth buffalo	FRL	Misc. states	0.58 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487
DDT	Flathead catfish	FRL	Misc. states	0.68 residue (SB)	--	same as above	Henderson, et al (1971). AMIC-1487

DDT	Goldeye	FRL	Misc. states	0.02-0.34 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
DDT	Walleye	FRL	Misc. states	0.04-0.20 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
DDT	Sauger	FRL	Misc. states	0.18 residue (SB)	--	same as above	Henderson,et al(1971), AMIC-1487
DDT	Flannelmouth sucker	FRL	Misc. states	0.19 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDT	Black bullhead	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDT	White bass	FRL	Misc. states	0.21 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
DDT	Black crappie	FRL	Misc. states	0.22-0.25 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDT	Largescale sucker	FRL	Misc. states	0.05-0.45 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDT	Smallmouth bass	FRL	Misc. states	0.16-0.28 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDT	Northern squawfish	FRL	Misc. states	0.05-0.10 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
DDT	Chiselmouth	FRL	Misc. states	0.07-0.09 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
DDT	Klamath sucker	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
DDT	Rainbow trout	FRL	Misc. states	0.03-0.07 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Bridgelip sucker	FRL	Misc. states	0.38 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487
DDT	Arctic grayling	FRL	Misc. states	0.21 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487
DDT	Round whitefish	FRL	Misc. states	0.34 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487
DDT	Longnose sucker	FRL	Misc. states	0.01-0.10 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487
DDT	Yellow perch	FRL	Misc. states	0.03-2.96 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487
DDT	Chain pickerel	FRL	Misc. states	0.08 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487
DDT	White catfish	FRL	Misc. states	0.21-0.31 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487
DDT	White perch	FRL	Misc. states	0.03-1.30 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487
DDT	Goldfish	FRL	Misc. states	0.69 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487
DDT	Bluegills	FRL	Misc. states	0.04-0.24 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487
DDT	Redbreast sunfish	FRL	Misc. states	0.03 residue (SS)	--	same as above	Henderson, et al (1971), AHIC-1487

DDT	Pumpkinseed	FRL	Misc. states	0.23 residue (WB)	--		same as above	Henderson, et al (1971), AMIC-1487
DDT	Largemouth bass	FRL	Misc. states	0.86-1.57 residue (SB)	--		same as above	Henderson, et al (1971), AMIC-1487
DDT	Brown bullhead	FRL	Misc. states	0.86-8.42 residue (SB)	--		same as above	Henderson, et al (1971), AMIC-1487
DDT	Carp	FRL	Misc. states	0.81-8.96 residue (SB)	--		same as above	Henderson, et al (1971), AMIC-1487
DDT	Channel catfish	FRL	Misc. states	0.82-5.87 residue (SB)	--		same as above	Henderson, et al (1971), AMIC-1487
DDT	Gambusia affinis	BSA	--	0.04 ppb (SB)	a[b]		C-14-labelled DDT was taken up by mosquitofish more rapidly over a 36-hr period at 28 C than at 9 C. It was shown that only live fish take up DDT, that uptake was related to respiration rate and that small fish are more efficient than larger fish in removing DDT from water. One implication of this study is that at warmer temperatures DDT is taken up more rapidly, thus suggesting that thermal releases be carefully controlled.	Murphy and Murphy (1971), AMIC-1478
DDT	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5		All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
DDT	Salvelinus fontinalis (1.15 g)	BCFA	--	7.4 (T4)	a[b],c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium		Four insecticides were evaluated on four fish species at two body weights. Standard method bioassay procedures were followed. Symptomology was also reported. Generally, toxicity was significantly different at the two body weights, i.e., more toxic at the lower body weight, except for Malathion. Well-defined experimental conditions were said to result in truer measurement of toxicity.	Post, et al (1971), AMIC-1812
DDT	Salvelinus fontinalis (2.13 g)	BCFA	--	11.9 (T4)	a[b],c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium		same as above	Post, et al (1971), AMIC-1812

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables Controlled or Noted	Comments	Reference
DDT	Salmo clarki (0.33 g)	BCFA	--	0.0001 (T4)	as,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
DDT	Salmo clarki (1.25 g)	BCFA	--	1.37 (T4)	as,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
DDT	Salmo gairdneri (0.41 g)	BCFA	--	0.0002 (T4)	as,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
DDT	Oncorhynchus kisutch (0.5 g)	BCFA	--	0.011 (T4)	as,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
DDT	Oncorhynchus kisutch (1.65 g)	BCFA	--	0.019 (T4)	as,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
DDT	Artemia spp.	L	--	0.00001 and 0.000001 (sublethal)	--	Artemia spp populations exposed in 1966 to the indicated DDT concentrations and studied for up to 4 generations were found to have residues of p,p"DDT that were higher than control	Grosch (1971), AMIC-2098

						background. Brine shrimp naupili were apparently most sensitive to DDT compared to older stages. Cyclic coexistence of pesticide residue and vulnerable stage of life cycle influenced succeeding generations.	
DDT	Sebastodes sp.	FO	Pacific Ocean, Cal.	0.46 (liver residue)	--	Samples of marine animals were collected from three locations off the coast of Southern California and analyzed for residues of chlorinated hydrocarbons. The data suggest that Kellet"s whelk would be a good indicator organism for studying the regional distribution of chlorinated hydrocarbons.	Hunson (1972), AMIC-3896
DDT	Panulirus interruptus	FO	Pacific Ocean, Cal.	0.037 (muscle residue)	--	same as above	Hunson (1972), AMIC-3896
DDT	Paralabrax nebulifer	FO	Pacific Ocean, Cal.	0.21 (liverresidue)	--	same as above	Hunson(1972), AMIC-3896
DDT	Anisotremis davidsoni	FO	Pacific Ocean, Cal.	0.4 (liver residue)	--	same as above	Hunson(1972), AMIC-3896
DDT	Pleuronectes pulchrus	FO	Pacific Ocean, Cal.	0.21 (liver residue)	--	same as above	Hunson(1972), AMIC-3896
DDT	Haliotis rufescens	FO	Pacific Ocean, Cal.	less than 0.1 (liver residue)	--	same as above	Hunson (1972), AMIC-3896
DDT	Strongylocent rotus franciscanus	FO	Pacific Ocean, Cal.	0.057-0.073 (gonad residue)	--	same as above	Hunson (1972), AMIC-3896
DDT	Hinnites multirugosis	FO	Pacific Ocean, Cal.	0.032 (gonad residue)	--	same as above	Hunson (1972), AMIC-3896
DDT	Haliotis corrugata	FO	Pacific Ocean, Cal.	0.042 (digestive gland residue)	--	same as above	Hunson (1972), AMIC-3896
DDT	Kelletia kelletii	FO	Pacific Ocean, Cal.	0.077 (residue)	--	same as above	Hunson (1972),AMIC-3896
DDT	Plants (algae and higher aquatic	F	Various ponds and streams in	0.01 to 0.74 (residue)	--	Plant, invertebrate, fish, and mud samples were pooled, homogenized, and analyzed for DDT. Birds were analyzed	Dimond, et al (1971), AMIC-3291

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	plants)		Maine			individually. The data represent the range of DDT concentration over a 10-year period after one application. Highest concentrations were found immediately after and 1 yr after application with considerably less two years and after. However, the residues even after 10 years were still well above those in brooks never treated. This study further demonstrated the persistence of DDT in the environment and its tendency to spread and concentrate in food chains.	
DDT	Invertebrates (Cambarus bartoni, freshwater mussels, and smaller animals)	F	Various ponds and streams in Maine	0.03 to 2.41 (residue)	--	same as above	Dimond, et al(1971), AMIC-3291
DDT	Fish (Salvelinus fontinalis and Semotilus atromaculatus primarily)	F	Various pondsand streams in Maine	0.21 to 9.84 (residue)	--	same as above	Dimond, et al (1971), AMIC-3291
DDT	Birds (Megaceryle alcyon, Mergus merganser, and Lophodytes cucullatus)	F	Variousponds and streams in Maine	4.2 to 10.1 (residue)	--	same as above	Dimond, et al (1971), AMIC-3291
DDT	Muds	F	Various ponds and streams in Maine	0.03 to 0.83 (residue)	--	same as above	Dimond, et al(1971), AMIC-3291
DDT	Limnephilus rhombicus (larvae)	FS	Knights Creek, Dun County, Misc.	0.01(whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in	Maubry, et al (1968), AMIC-3753

							1963-1969 with various chlorinated hydrocarbon pesticides. No residues were found in water samples. Silt samples contained 0.002-0.013 ppm endrin and 0-0.005 ppm dieldrin. Endrin residues of 0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studies was limited.	
	DDT	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.01 (whole body residue)	--	same as above	Newbry, et al (1968), AMIC-3793
	DDT	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.03(whole body residue)	--	same as above	Newbry, et al (1968), AMIC-3793
	DDT	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.4-1.4 (fat residue)	--	same as above	Newbry, et al (1968), AMIC-3793
	DDT	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	0.1-0.6(fat residue)	--	same as above	Newbry, et al (1968), AMIC-3793
	DDT	Cottus bairdi	FS	Knights Creek, Dun County, Wisc.	0.5-1.5 (fat residue)	--	same as above	Newbry, et al (1968), AMIC-3793
	DDT	Rhinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	0.15 (fat residue)	--	same as above	Newbry, et al (1968), AMIC-3793
	DDT	Salvelinus fontinalis (15.2 cm)	L	--	0.1-0.3 (SSI)	a*	Neurophysiological function of brook trout was affected by 24-hr exposure to DDT as determined by measurement of electrical activity of lateral lines. Partially exposed lateral lines of freshly killed fish were fitted with electrodes. DDT caused the lateral line nerve to become hypersensitive to experimental stimuli and affected behavioral responses of fish to temperature.	Anderson (1968), AMIC-3788

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Oncorhynchus kisutch (2.9 g)	L	--	0.33 (T3I)	--	A diet containing DDT fed to coho salmon resulted in median survival times directly proportional to body weight. Supplemental feeding prolonged lifespan, but mean survival time remained a direct function of body weight. Smaller salmon were more susceptible because lipid content apparently failed to provide for storage detoxification of DDT. Considerable additional data are presented.	Buhler, et al (1970), AMIC-3781
DDT	Oncorhynchus kisutch (7.4 g)	L	--	1.3 (T6I)	--	same as above	Buhler, et al (1970), AMIC-3781
DDT	Oncorhynchus kisutch (15.84 g)	L	--	2.6 (T186)	--	same as above	Buhler, et al (1970), AMIC-3781
DDT	Salvelinus fontinalis (118-188 g)	L	--	0.02 (SS)	8°.0	Brook trout conditioned to light and shock respond to both by the propeller-tail reflex. Exposure to DDT resulted in markedly delayed ability to learn. The authors state that DDT apparently affects the CNS and may cause adverse effects on such behavioral activities as territorial defence and migration.	Anderson, et al (1970), AMIC-3782
DDT	Parophrys vetulus	FH	Pacific Northwest Coast, Blaine, Wash.	0.01 (residue)	--	Pesticides from the Columbia River into Puget Sound apparently contaminated fish constituting commercial catches in Pacific Northwest waters. Residues in these marine products were substantially lower than the FDA tolerance for beef (7 ppm). Fish from locations near the mouth of the Columbia River had higher pesticide content than ones caught farther away.	Stout (1968), AMIC-3784
DDT	Merluccius productus	FH	Pacific Northwest	0.01-0.06 (residue)	--	same as above	Stout (1968),

			Coast, Sarasota Passage, Wash.				ANIC-3784
DDT	Neriuccius productus	FH	Pacific Northwest Coast, Fort Susan, Wash.	0.04-0.89 (residue)	--	same as above	Stout (1968), ANIC-3784
DDT	Neriuccius productus	FH	Pacific Northwest Coast, Cape Foulweather, Ore.	0.01(residue)	--	same as above	Stout (1968), ANIC-3784
DDT	Neriuccius productus (fisheeal)	FH	Pacific Northwest Coast, Aberdeen, Wash.	0.00 (residue)	--	same as above	Stout (1968), ANIC-3784
DDT	Sebastodes alutus	FH	Pacific Northwest Coast, Hecate Strait, B.C.	0.01 (residue)	--	same as above	Stout (1968), ANIC-3784
DDT	Platichthys stellatus	FH	Pacific Northwest Coast, Blaine, Wash.	0.01(residue)	--	same as above	Stout (1968), ANIC-3784
DDT	Gadus macrocephalus	FH	Pacific Northwest Coast, Blaine, Wash.	0.004 (residue)	--	same as above	Stout (1968), ANIC-3784
DDT	Sebastodes flavidus	FH	Pacific Northwest Coast, Hecate Strait, B.C.	0.004-0.05 (residue)	--	same as above	Stout (1968), ANIC-3784
DDT	Sebastodes flavidus	FH	Pacific Northwest Coast, Ilwaco, Wash.	0.04-0.19 (residue)	--	same as above	Stout (1968), ANIC-3784
DDT	Phosphates	BCFA	--	0.018 (T4)	a*,e	LAS acted synergistically with	Solon, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	praseinus					parathion to cause less survival of fatheds but had an indeterminate effect with DDT and no synergistic effect with Endrin.	(1969), AMIC-3786
DDT	Carassius auratus	L	--	45-180 (SR 5-20)	a*	Goldfish were exposed to increasing concentrations of DDT and residues determined after 21 days of exposure. Most DDT had been converted to DDE. Phenobarital had no significant effect on insecticide residues.	Young, et al (1971), AMIC-3796
DDT	Carassius auratus	L	--	0-0.1 (residue)	a*	same as above	Young, et al (1971), AMIC-3796
DDT	Salmo gairdneri (186-288 g)	L	--	15 (SR 6 hr)	a*	In aquarium water, 15 ppm DDT caused no apparent electrophysiological differences in lateral line preparations. However, tremors and hyperexcitability were observed after 1 hr. Neural discharge was not affected by intravenous injections, but tremors occurred at concentration levels of 0.5 ppm and above. The authors conclude that spontaneous activity of the lateral line is not a sensitive index for DDT neurotoxic effet.	Bahr, et al (1971), AMIC-3888
DDT	Salmo gairdneri (186-288 g)	L	--	0.1-2.8 (NTE, intravenous)	a*	same as above	Bahr, et al (1971), AMIC-3888
DDT	Triturus cristatus	L	--	0.62-1.4 (residue)	--	DDT caused hyperactivity in exposed tadpoles. This caused increased capture lunges of newts thus increasing the predatory efficiency of the newts. DDT had no apparent effect on the newts.	Cooke (1971), AMIC-3814
DDT	Rana temporaria	L	--	0.85 (SR 5-19 hr)	--	same as above	Cooke (1971), AMIC-3814
DDT	Rana temporaria	L	--	0.9-1.2 microgram (residue)	--	same as above	Cooke (1971), AMIC-3814

DDT	Carassius auratus (8-15 g)	BSA	--	1.0 (SB 2.5hr)	a,d*	Fish exposed to DDT were killed and brain electrical activity recorded by means of Ag-AgCl bipolar electrodes. After 2.5 hr exposure, fish displayed complete loss of balance and swam continuously on their sides. Amplitude and frequency of spontaneous electrical activity were altered. This coincided with permanent loss of balance. The authors state that this is the first record of a change in fish EEG following DDT poisoning.	Aubin, et al(1969), AMIC-3839
DDT	Carassius auratus (8-15 g)	BSA	--	1.0 (T 18 hr)	a,d*	same as above	Aubin, et al (1969), AMIC-3839
DDT	Salmo salar	L	--	0.02-0.20 (SB1)	a*,d*	Fish were conditioned by means of light change and low voltage electrical shock. Alteration of previous training procedures for avoidance conditning, indicated that salmonids were able to acquire a conditioned avoidance response when pretreated with sublethal doses of DDT.	Jackson, et al (1970), AMIC-3837
DDT	Salvelinus fontinalis (yearling)	L	--	0.02-0.20 (SB1)	a*,d*	same as above	Jackson, et al (1970), AMIC-3837
DDT	Salvelinus fontinalis	L	--	0.4 (SB)	a*	The thermal acclimation mechanism of brook trout acclimated at 9 and 18 C was altered significantly at sublethal DDT concentrations. This was also true for conditioned avoidance, in which time for training was recorded, and for memory retention to a lesser extent.	Anderson, et al (1969), AMIC 3836
DDT	Endomychura craveri (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	39 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Endomychura craveri (eggs)	F	Western U.S., Pacific Ocean,	0.31-2.4 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Panama, Mexico, and Antarctic				
DDT	Thalasseus elegans (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antartic.	5.8 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Larus heermani (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	48 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Pomoxis annularis	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.83 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Pomoxis nigro-maculatus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antartic	2.10 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Lepomis macrochirus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	5.5 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Pygoscelis adeliae	F	Western U.S.,	0.128 (residue)	--	same as above	Risebrough, et al

		(eggs)		Pacific Ocean, Panama, Mexico, and Antarctic				(1968), AMIC-3844
	DDT	Aechaerpherus occidentalis	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	26.4 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Fulmanus glacialis	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.41-17.5 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Puffinus creatopus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	3.8 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Puffinus griseus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	2.3-12.3 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Puffinus tenuirostris	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	39 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Oceanodroma homochroa	F	Western U.S., Pacific Ocean, Panama, Mexico, and	59.3 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Antarctic				
DDT	Pelecanus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	18.8-11.5 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Fregata magnificens (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.6887-8.83 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Sula leucogaster	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.2 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Phalacrocorax penicillatus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.326 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Phalacrocorax pelagicus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.128 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Anas cyanoptera	F	Western U.S., Pacific Ocean,	18.9 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

				Panama, Mexico, and Antarctic			
	DDT	Elanus leucurus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.34-9.8 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Accipiter cooperii	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	25.2 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Aquila chrysaetos (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	2.8 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Pandion haliaetus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	55.8 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Falco columbarius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	2-9 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Falco sparverius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.84 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Falco sparverius (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.2 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Nycticorax nycticorax (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.541-0.869 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Larus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.385-0.883 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Sterna forsteri (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.665 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Hydroprogne caspia (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.269-1.438 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Phalacrocorax fuliginosus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.78 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

DDT	Uria aalge (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	191 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Ptycheramphus aleuticus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	4.8 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Synthliboramphus hypoleucus antiquus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.75 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Cerorhinca monocerata	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	2.7 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Zonaidura macroura	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.19 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Tyto alba	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.3-6.6 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Sturnella neglecta	F	Western U.S., Pacific	8.2-3.3 (whole body residue)	--	same as above	Risebrough, et al (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Ocean, Panama, Mexico, and Antarctic				AMIC-3844
DDT	Falco peregrinus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.82 (residue)	--	Peregrine falcons, falcon prey, and other predator species were collected widely and analyzed for DDT, DDE, PCB, and a few other pesticides to a lesser degree. PCB and DDT were found to be widely dispersed globally. PCB was found to be a powerful inducer of hepatic enzymes that degrade oestradiol. Reductions in thickness of egg shells, eggshell weight, and water retention occurred. All affect hatching success. The authors state that the peregrine may be the first species entirpated by global contamination.	Risebrough, et al (1968), AMIC-3844
DDT	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.9-296 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	64-5,888 (fat residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Falco peregrinus (adult)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	85-127 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
DDT	Falco peregrinus	F	Western U.S.,	2,688 (fat residue)	--	same as above	Risebrough, et al

		(adult)		Pacific Ocean, Panama, Mexico, and Antarctic				(1968), AMIC-3844
	DDT	Podiceps caspicus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.26-12.1 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Leucomelanie melania	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	9.2 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Halocyptena microsoma	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	3.2 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Pizonyx vivesi	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.71 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	DDT	Ictalurus punctatus	BSA	--	0.816 (T4)	8. synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	Macek, et al (1970), AMIC-9918

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Salmo trutta	BSA	--	0.002 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Oncorhynchus kisutch	BSA	--	0.004 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Perca flavescens	BSA	--	0.009 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Ictalurus melas	BSA	--	0.005 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Carassius auratus	BSA	--	0.021 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Cyprinus carpio	BSA	--	0.010 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Pimephales promelas	BSA	--	0.019 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Lepomis macrochirus	BSA	--	0.008 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Lepomis microlophus	BSA	--	0.005 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Micropterus salmoides	BSA	--	0.002 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510
DDT	Salmo gairdneri	BSA	--	0.007 (T4)	8, synthetic test water	same as above	Macek, et al(1970), AMIC-5510

	DDT	Palaemonetes kadiakensis (resistant)	BSA	--	0.0037-0.0068 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; least toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1978), ANIC-5519
	DDT	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0026 (T1)	a*	same as above	Naqvi, et al (1978), ANIC-5519
	DDT	Ictalurus catus	FL	Clear Lake, Cal.	less than 1 (flesh residue)	--	Residue analysis results mainly for TDE in fish, birds, and plankton from 1959 through 1965 were reported. The residues primarily resulted from application of DDT to farmland and for gnat control. In some cases, data for a single animal in one year were given. Primary emphasis was on largemouth bass and white catfish. The general level of TDE contamination in birds and fish declined markedly from 1958 to 1965. This decline correlated directly with strict limitation by permits of DDT applications during the latter years.	Linn, et al(1969), ANIC-5521
	DDT	Perca flavescens	FLR	93 sampling stations in Mass.	0.06-13.2 (residue)	--	Fish indigenous to Massachusetts freshwater streams were analyzed for DDT and DDT metabolites during 1965-1967. Generally there was an increase in pesticide content during the three year period.	Lyman, et al (1968), ANIC-3839
	DDT	Lepomis gibbosus	FLR	93 sampling stations in Mass.	0-9.1 (residue)	--	same as above	Lyman, et al (1968), ANIC-3839
	DDT	Catostomus commersoni	FLR	93 sampling stations in Mass.	0-11.2 (residue)	--	same as above	Lyman, et al (1968), ANIC-3839

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Ictalurus nebulosus	FLR	93 sampling stations in Mass.	8.32 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Cyprinus carpio	FLR	93 sampling stations in Mass.	8.3-1.8 (residue)	--	same as above	Lyman,et al (1968), AMIC-3839
DDT	Esox niger	FLR	93 sampling stations in Mass.	8.02-1.8 (residue)	--	same as above	Lyman,et al (1968), AMIC-3839
DDT	Notemigonus crysoleucas	FLR	93 sampling stations in Mass.	8-1.1 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Semotilus corporalis	FLR	93 sampling stations in Mass.	8-2.8 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Lepomis macrochirus	FLR	93 sampling stations in Mass.	8-2.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Ambloplites rupestris	FLR	93 sampling stations in Mass.	8.4-8.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Semotilus atromaculatus	FLR	93 sampling stations in Mass.	8.02-8.3 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Micropterus dolomieui	FLR	93 sampling stations in Mass.	8.2-8.6 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Alosa pseudo-harengus	FLR	93 sampling stations in Mass.	8.34 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Fundulus heteroclitus	FLR	93 sampling stations in Mass.	8.7-2.8 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Notropis	FLR	93 sampling	8.1-3.3	--	same as above	Lyman, et al

	cornutus		stations in Mass.	(residue)			(1968), AMIC-3839
DDT	Roccus americanus	FLR	93 sampling stations in Mass.	0.2-2.2 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Pomoxis nigro-maculatus	FLR	93 sampling stations in Mass.	8.4 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Fundulus diaphans	FLR	93 sampling stations in Mass.	5.9 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Notropis anatostanus	FLR	93 sampling stations in Mass.	0.48 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Lepomis auritus	FLR	93 sampling stations in Mass.	0.44 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Rhinichthys atratulus	FLR	93 sampling stations in Mass.	0-0.14 (residue)	--	same as above	Lyman, et al (1968), AMIC-3839
DDT	Salvelinus fontinalis (caged)	FS	Bobby"s Brook, Labrador, Can.	0.1 (NTE)	c,d,e,g	In studying control of black fly, the indicated aquatic species were studied at a series of six sampling stations. Water quality was unaffected by the DDT application. No caged fish died, but wild ones did apparently resulting from ingestion of dead invertebrate larvae. Invertebrates were collected by bottom sampling and by drift nets, and fish by netting and angling. Fish mortality could always be related to at least a ten-fold increase in DDT residues in the fish. DDT caused high bottom fauna mortality by direct contact. Caddisfly larvae were more affected than stonefly and mayfly larvae. The author stated that DDT larviciding for black fly control was not successful because of harm to non-target organisms.	Hatfield (1969), AMIC-5778
DDT	Salvelinus fontinalis (wild)	FS	Bobby"s Brook, Labrador, Can.	0.1 (SB)	c,d,e,g	same as above	Hatfield (1969), AMIC-5778

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Simulium venustum (larvae)	FS	Hobby"s Brook, Labrador, Can.	0.1 (SB)	c,d,e,g	same as above	Hatfield (1969), AMIC-5778
DDT	Bottom invertebrates	FS	Hobby"s Brook, Labrador, Can.	0.1 (K)	c,d,e,g	same as above	Hatfield (1969), AMIC-5778
DDT	Lepomis macrochirus (liver mitochondria)	L	--	598 (SB)	a*	Oxygen uptake by bluegill liver mitochondria was inhibited in the presence of DDT and succinic acid. Increased hydrolysis of ATP also occurred in the presence of Mg and Mn ions. The author states that the primary effect of DDT appears to be inhibition of electron flow from succinic acid to the cytochrome chain.	Hiltibran (1971), AMIC-5975
DDT	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.05 (K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969), AMIC-5979
DDT	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops	FL and BSA	Belzoni, Miss	0.05 (91 percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979

		albidus, Orthocyclops sedestus)						
	DDT	Tubifex tubifex	FL and BSA	Nelson, Miss.	3.8 (NTE)	--	same as above	Naqvi, et al (1969), AMIC-5979
	DDT	Crassostrea virginica (larvae)	L	--	0.034 (T14)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
	DDT	Gambusia affinis (female, 4.3 cm, 1.9 g)	BSA	--	0.82 (T4)	a,c,d,e,f,i, (Honolulu tap water)	The five fish species are commonly found in streams and estuaries in semi-tropical areas. G. affinis was the most tolerant. Varied sensitivity to the toxicants were found. K. sandvicensis was the most sensitive fish studied. The standard method procedure was followed.	Hunogawa, et al (1978), AMIC-6567
	DDT	Lebistes reticulatus (male, 1.8 cm, 0.2 g)	BSA	--	0.883 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Hunogawa, et al (1978), AMIC-6567
	DDT	Tilapia mossambica (3.4 cm, 1.3 g)	BSA	--	0.887 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Hunogawa, et al (1978), AMIC-6567
	DDT	Kuhlia sandvicensis (4.3 cm, 1.5 g)	BSA	--	0.0839 (T4)	a,c,d,e,f, i,salt water	same as above	Hunogawa, et al (1978), AMIC-6567
	DDT	Stolephorus purpurea (3.6 cm, 0.4 g)	BSA	--	0.881 (T 12hr)	a,c,d,e,f, i, salt water	same as above	Hunogawa, et al (1978), AMIC-6567

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Carcinus maenas	BSA	--	0.3-1.8 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
DDT	Cardium edule	BSA	--	greater than 10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
DDT	Pleuronectes platessa	BSA	--	0.003-0.01 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
DDT	Freshwater drum	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.62 (whole body residue)	--	Fish from Lake Michigan contained 2 to 7 times more DDT (and DDT analogs) and Dieldrin residues than fish from the other Great Lakes. Fish from Lake Superior invariably had the lowest accumulations of both chemicals. The compounds tended to concentrate in fat (oils). Considerable additional data are presented. The author noted the need to reduce pesticide usage to a minimum and to replace these insecticides with less persistent materials.	Reinert (1970), AMIC-196
DDT	Goldfish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.70 (whole body residue)	--	same as above	Reinert (1970), AMIC-196

DDT	Kiyi	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	3.28 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Lake herring	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	1.44-3.51 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Lake trout	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	6.61-7.44 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Lake whitefish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	3.45-5.02 (wholebody residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Rock bass	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	3.40 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Round whitefish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	3.57 (whole body residue)	--	same as above	Reinert (1978), AMIC-196

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Sea lamprey	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	1.27 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Slimy sculpin	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.22-2.33 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Spottail shiner	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.25 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Nine-spined stickleback	FL	Great Lakes (Ontario Huron, Erie, Superior, Michigan)	0.43 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Stonecat	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.28 (whole body residue)	--	same as above	Reinert (1978), AMIC-196

DDT	Trout perch	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.94 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Walleye	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	1.12-6.82 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	White bass	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	1.89-2.76 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	White perch	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	4.32 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	White sucker	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.37-1.14 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Yellow perch	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.87-2.93 (whole body residue)	--	same as above	Reinert (1978), AMIC-196

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDT	Emerald shiner	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.94 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Gizzard shad	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.53-0.63 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Alewife	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.72-3.88 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
DDT	American smelt	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.32-1.56 (wholebody residue)	--	same as above	Reinert (1978), AMIC-196
DDT	Bloater	FL	Great Lakes (Ontario,	1.89-9.83 (whole body	--	same as above	Reinert (1978),

				Huron, Erie, Superior, Michigan)	residue)			AMIC-196
	DDT	Brown bullhead	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	8.28 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
	DDT	Carp	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	1.92 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
	DDT	Channel catfish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	6.90 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
	DDT	Coho salmon (flesh)	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	8.72 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
	DDT	Coho salmon (eggs)	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	2.12 (whole body residue)	--	same as above	Reinert (1978), AMIC-196

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables Controlled or Noted	Comments	Reference
			Lake Michigan)				
DDT	Cyprinus carpio	FR	St. Lawrence River, Montreal, Canada	0.38(0.33 ppm max tissue residue)	--	Residues of DDD were measured in water, mud, molluscs, and fish during and after DDD application in 1967. Sampling points were above the point of application and 10 and 45 mi downstream. Residues from unknown sources were detected upstream. Downstream residues were more than twice those obtained upstream (0.156 versus 0.369 ppm). The highest concentration in an individual fish was 1.81 ppm.	Fredeen, et al (1970), AMIC-534
DDT	Catostomus commersoni	FR	St. Lawrence River, Montreal, Canada	0.38(0.33 ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDT	Ameiurus nebulosus	FR	St. Lawrence River, Montreal, Canada	0.38(0.12 ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDT	Perca flavescens	FR	St. Lawrence River, Montreal, Canada	0.38 (0.55ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDT	Esox lucius	FR	St. Lawrence River, Montreal, Canada	0.38 (0.38 ppmmax tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDT	Ambloplites rupestris	FR	St. Lawrence River, Montreal, Canada	0.38(0.02 ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDT	Campeloma sp.	FR	St. Lawrence River, Montreal, Canada	0.38 (0.40ppm max tissue residue)	--	same as above	Fredeen, et al (1970), AMIC-534
DDT	Cyprinadon	BSA	--	0.015-0.02 (K)	a*,	Sensitivity of three generations	Holland, et

		variegatus (50-70 mm)				seawater	of sheepshead minnows to DDT and Endrin was determined. Sensitivity to DDT varied seasonally. Fish were bred in ponds 15m X 5m X 1.25m exposed to pesticides in aquaria, and survivors used for breeding. The results for DDT were not entirely clear due to the seasonal variability. Increased and decreased sensitivity were recorded for the F1 generation at different times, increased sensitivity for the F2, and decreased for the F3. The authors stated that incorporation of DDT in ova via lipids may have caused increased sensitivity. Endrin toxicity was decreased in the F1 and increased in the F2 generation.	al (1978), AMIC-726
	DDT	Benthic insects	F	Trout Creek, Wasatch County, Utah	0.812-0.868 (K)	Stream flow	Complete depopulation was found at the collection station 2000 m downstream from application point. Insect mortality was independent of DDT concentration in areas of turbulent flow, thus mortality was not directly related to DDT concentration in this field situation. Repopulation was incomplete after 57 wk.	Sanstelle (1969), AMIC-964
	DDVP	Labeo rohita (fry)	BSA	--	11.2 (T7)	a,c,d,e,f	DDVP and Phosphamidon were shown to be selective toxicants that can be used for eradication of undesirable animals from ponds without injuring carp. DDVP seemed superior since less was needed, it was not influenced by turbidity, and it detoxified more rapidly than phosphamidon.	Konar (1969), AMIC-5453
	DDVP	Labeo rohita (fingerling)	BSA	--	22.4 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
	DDVP	Trichogaster fasciatus (young)	BSA	--	1.8 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
	DDVP	Trichogaster fasciatus (adult)	BSA	--	2.4 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
	DDVP	Channa punctatus (fry)	BSA	--	8.8 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
	DDVP	Puntius	BSA	--	6.2 (T7)	a,c,d,e,f	same as above	Konar

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	sophora (adult)						(1969),AMIC-5453
DDVP	Anabas testudineus	BSA	--	11.7 (T?)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Heteropneustes fossilis	BSA	--	17.8 (T?)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Esomus danrica (fry)	BSA	--	2.8 (T?)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Esomus danrica (adult)	BSA	--	18.2 (T?)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Notonecta sp.	BSA	--	0.001 (T?)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Dytiscus sp. (larvae)	BSA	--	0.064 (T?)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Dytiscus sp. (adult)	BSA	--	0.35 (T?)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Sphaerodema annulatus	BSA	--	0.085 (T?)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Ranatra filiforeis	BSA	--	0.13 (T?)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Anisoptera (nymphs)	BSA	--	0.15 (T?)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
DDVP	Cybister sp.	BSA	--	0.21 (T?)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453

DDVP	Naas sp.	BSA	--	0.27 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Balostoma indica	BSA	--	0.28 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Hydrophilus sp.	BSA	--	0.35 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Volvox	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Pandorina	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Closterium	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Brachionus	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Gastrotricha	BSA	--	5.0 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Cypris	BSA	--	1.0 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Cyclops	BSA	--	0.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Nauplius	BSA	--	0.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Daphnia	BSA	--	0.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Ceriodaphnia	BSA	--	0.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DDVP	Diaptomus	BSA	--	8.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Nandus nandus	BSA	--	2.6 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Rita rita	BSA	--	2.3 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Amphipneus cuchia	BSA	--	3.4 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Mystus vittatus (fry)	BSA	--	2.3 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Mystus vittatus (adult)	BSA	--	6.6 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Puntius sophore (fry)	BSA	--	1.8 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Channa punctatus (fingerling)	BSA	--	1.8 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Channa punctatus (adult)	BSA	--	2.9 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Mastacembalus pancalus	BSA	--	2.6 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Macrognathus aculeatum	BSA	--	3.6 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
DDVP	Channa punctatus	L	--	20 (S81)	a*	Snakehead fish eggs were unaffected by DDVP concentrations of less	Konar (1969), AMIC-

		(eggs)					than 1.0 ppm, but delayed hatching occurred at higher concentrations. Yolk sac absorption was decreased at 1.6-4.0 ppm and stopped at 5.0 ppm or more. Eggs and hatchlings survived well at 0.1 ppm DDVP.	6388
	DDVP	Channa punctatus (hatchlings)	L	--	2.5 (T2)	a*	same as above	Konar (1969), AMIC-6388
	Decamethonium dibromide	Negaprion brevirostris (1-3 kg)	BSA	--	50 (MTE 3.5 HR)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
	Delrad	Mercenaria mercenaria (larvae)	L	--	0.031 (T12)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
	Delrad	Crassostrea virginica (larvae)	L	--	0.072 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
	Demeton methyl	Fish (not specified)	--	--	greater than 1.0-10.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mandeley-Thomas(1971) AMIC-1856
	Dernol	Cardium edule	BSA	--	100-330 (T2)	as(continuous aeration, seawater, and daily	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with	Portmann, et al (1971), AMIC-7781

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					solution renewal)	toxicity of chemicals to freshwater organisms.	
Dursban	Crangon crangon	BSA	--	100-330 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
Dursban	Pandalus montagui	BSA	--	100-330 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
De De Tane 25	Rasbora heteromorpha	BCFA and BSA	--	0.11 (T2)	ae,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969), ANIC-5425
De De Tane (liquid)	Rasbora heteromorpha	BCFA and BSA	--	0.11 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969), ANIC-5425

De De Tane (liquid)	Rasbora heteromorpha	BCFA and BSA	--	0.02 (T2 in acetone)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969), AMIC-5425
De De Tane (paste)	Rasbora heteromorpha	BCFA and BSA	--	10.7 (T1)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1963),AMIC-5425
De De Tane (wettable)	Rasbora heteromorpha	BCFA and BSA	--	0.001 (T2 in acetone)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969), AMIC-5425
De De Tane (wettable)	Rasbora heteromorpha	BCFA and BSA	--	0.2 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969),AMIC-5425
Diacetone alcohol	Phormidium ambiguum	L	--	8.5-10.8 (MTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be	Otto(1978), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Diazinon	Hesbora heteromorpha	BCFA and BSA	--	1.45 (T1)	ap,a,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Diazinon	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
Dicamba	Gammarus fasciatus	BSA	--	greater than 100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustaces were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978), AMIC-493
Dicamba	Paleomonetes kadiakensis	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (,78), AMIC-493
Dicamba	Asellus brevicaudus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1978), AMIC-493
Dicamba	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1978), AMIC-493
Dicamba	Daphnia magna	BSA	--	greater than	a*	same as above	Sanders

				188.8 (T2)				(1978),AMIC-453
Dicamba	Cyprinodon variegatus	BSA	--	greater than 188.8 (T2)	a*	same as above		Sanders (1978),AMIC-453
Dicamba	Lepomis macrochirus	BSA	--	40.8 (T2)	a*	same as above		Sanders (1978), AMIC-453
Dicapthon	Mercenaria mercenaria (eggs)	L	--	3.34 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.		Davis, et al (1969),AMIC-5998
Dicapthon	Mercenaria mercenaria (larvae)	L	--	9.74 (T12)	--	same as above		Davis, et al (1969),AMIC-5998
Dichlobenil	Rasbora heteromorpha	BCFA and BSA	--	9.7 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.		Alabaster (1969), AMIC-5425
Dichlobenil	Caltibactis sp. (nymph, 8-12 mm)	BSA	--	18.3 (T4)	a@,b@,c,f, i,l, and silica, calcium, magnesium, sodium, potassium,	The toxicity of herbicides Diquat and Dichlobenil to aquatic invertebrates and fish was determined in aquaria containing substrates natural to each species. Diquat was quite toxic to H. azteca but not as toxic to other organisms. Dichlobenil was less toxic to H. azetecus but considerably more toxic		Wilson, et al (1969), AMIC-5452

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	to the remaining organism than Diquat Mud lessened the toxicity of both, but more so for Diquat. Dichlobenil had a subiethal narcotizing effect on the organisms that resulted in immobilization. It was concluded that both herbicides could adversely affect certain fish food organisms.	
Dichlobenil	Callibactis sp. (nymph, 8-12 mm)	BSA	--	7.4 (S84)	ae,be,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452
Dichlobenil	Lepomis macrochirus	BSA	--	14.7 (T4)	ae,be,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452

	Dichlobenil	Libellula sp. (naiad, 16-24 mm)	BSA	--	greater than100 (T 1-4)	as,ba,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452
	Dichlobenil	Libellula sp. (naiad, 16-24 mm)	BSA	--	greater than100 (SB 1-4)	as,ba,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452
	Dichlobenil	Limnephilus sp. (larva, 15-20 mm)	BSA	--	13.8 (T4)	as,ba,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate,	same as above	Wilson, et al (1969), AMIC-5452

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					carbonate, sulfate, iron, dissolved solids, conductance		
Dichlobenil	Lienophilus sp. (larva, 15-20 mm)	BSA	--	12.88 (S84)	as,be,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452
Dichlobenil	Micropterus salmoides	BSA	--	12.5 (T4)	as,be,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452

	Dichlobenil	Hyalella azteca (adult, 4-8 mm)	BSA	--	8.5 (T4)	ae,be,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al(1969), ANIC-5452
	Dichlobenil	Hyalella azteca (adult, 4-8 mm)	BSA	--	2.8 (S84)	ae,be,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al(1969), ANIC-5452
	Dichlobenil	Enallagma sp. (naiad, 16-24 mm)	BSA	--	12.3 (S81)	ae,ce,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate,	same as above	Wilson, et al (1969), ANIC-5452

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					carbonate, sulfate, iron, dissolved solids, conductance		
Dichlobenil	Enallagma sp. (naiad, 16-24 mm)	BSA	--	20.7 (T4)	aa,bb,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al(1969), AMIC-5452
Dichlobenil	Gammarus fasciatus	BSA	--	18.8 (T2), 18.8 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Dichlobenil	Palaemonetes kadiakensis	BSA	--	9.8 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlobenil	Asellus brevicaudus	BSA	--	34.8 (T2)	a*	same as above	Sanders (1970), AMIC-453
Dichlobenil	Orconectes nais	BSA	--	22.8 (T2)	a*	same as above	Sanders (1970), AMIC-453

Dichlobenil	Daphnia magna	BSA	--	10.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Dichlobenil	Cypridopsis vidua	BSA	--	7.8 (T2)	a*	same as above	Sanders (1978), AMIC-453
Dichlobenil	Lepomis macrochirus	BSA	--	20.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Dichlone	Salmo gairdneri	BCFA and BSA	--	0.09 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dichlone	Gammarus fasciatus	BSA	--	0.24 (T2), 0.10 (T4)	a*	Of the aquatic weed herbicides evaluated, Dicione was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978), AMIC-453
Dichlone	Paleomontes kadiakensis	BSA	--	0.45 (T2)	a*	same as above	Sanders (1978), AMIC-453
Dichlone	Asellus brevicaudus	BSA	--	0.28 (T2)	a*	same as above	Sanders (1978), AMIC-453
Dichlone	Orconectes nais	BSA	--	3.2 (T2)	a*	same as above	Sanders (1978), AMIC-453
Dichlone	Daphnia magna	BSA	--	0.025 (T2)	a*	same as above	Sanders (1978), AMIC-453
Dichlone	Cypridopsis	BSA	--	0.23 (T2)	a*	same as above	Sanders

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	vidus						
Dichlone	Lepomis macrochirus	BSA	--	0.12 (T2)	a*	same as above	(1978), AMIC-463
Dichlorfenthion	Rasbora heteromorpha	BCFA and BSA	--	1.9 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Senders (1978), AMIC-463 Alabaster (1969), AMIC-5425
Dichlorfenthion	Rasbora heteromorpha	BCFA and BSA	--	2.1 (T1)	aa,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Dichlorfenthion	Rasbora heteromorpha	BCFA and BSA	--	0.73 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Dichlorophen (Na salt)	Salmo gairdneri	BCFA and BSA	--	0.22 (T2)	a*,c,e,f, hard (HW)or	same as above	Alabaster (1969), AMIC-5425

						soft (SW) synthetic dilution water, or seawater for some species		
	Dichlorophen (Na salt)	Rasbora heteromorpha	BCFA and BSA	--	0.15 (T2)	a@,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
	Dichlorvos	Rasbora heteromorpha	BCFA and BSA	--	6.5 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
	Dieldrin (1% percent H.O.)	Rasbora heteromorpha	BCFA and BSA	--	1.8 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
	Dieldrin	Fish (not specified)	--	--	greater than 0.001-0.01 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Henderson-Thomas(1971) AMIC-1056
	Dieldrin	Poecilia latipinna	BCFA	--	0.003 (partial K9)	a*	Studies were conducted with fish weighing 2-5 g in seawater at a	Lane, et al (1978).

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						temperature of 27 plus or minus 1 C. The purpose of the tests was to determine the effect of dieldrin on serum glutamic oxaloacetic transaminenase activity which increased at all exposures. However, little correlation was found between enzyme activity and total mortality.	AMIC-1283
Dieldrin	Poecilia latipinna	BCFA	--	0.006 (70 percent K3)	a*	same as above	Lane, etal (1970), AMIC-1283
Dieldrin	Poecilia latipinna	BCFA	--	0.012 (K3)	a*	same as above	Lane, et al (1970), AMIC-1283
Dieldrin	White sucker	FRL	Misc. states	0.01-0.35 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson,et al (1971), AMIC-1487
Dieldrin	Yellow perch	FRL	Misc. states	0.02-0.20 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	Chain pickerel	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	White catfish	FRL	Misc. states	0.01-0.50 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	White perch	FRL	Misc. states	0.06-0.56 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	Goldfish	FRL	Misc. states	0.04 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
Dieldrin	Pumpkinseed	FRL	Misc. states	0.05 residue	--	same as above	Henderson,

				(SB)			etal (1971), AMIC-1407
Dieldrin	Largemouth bass	FRL	Misc. states	0.01-1.59 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Brown bullhead	FRL	Misc. states	0.01-0.25 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-147
Dieldrin	Carp	FRL	Misc. states	0.01-0.54 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
Dieldrin	Channel catfish	FRL	Misc. states	0.01-0.36 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Redhorse sucker	FRL	Misc. states	0.01-0.12 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Gizzard shad	FRL	Misc. states	0.05-0.50 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Spotted sucker	FRL	Misc. states	0.30 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Bluegills	FRL	Misc. states	0.01-0.55 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Redbreast sunfish	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Striped mullet	FRL	Misc. states	0.02-0.39 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Rock bass	FRL	Misc. states	0.07 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
Dieldrin	Bleater	FRL	Misc. states	0.02-0.37	--	same as above	Henderson,et

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
				residue (SB)			al (1971), AMIC-1407
Dieldrin	Lake whitefish	FRL	Misc. states	0.03 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Lake trout	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
Dieldrin	White crappie	FRL	Misc. states	0.02-0.27 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Bigmouth buffalo	FRL	Misc. states	0.04-0.42 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Smallmouth buffalo	FRL	Misc. states	0.12 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Flathead catfish	FRL	Misc. states	0.03 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Goldeye	FRL	Misc. states	0.01-0.08 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Walleye	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
Dieldrin	Sauger	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
Dieldrin	Flannelmouth sucker	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407
Dieldrin	Freshwater drum	FRL	Misc. states	0.04 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1407

Dieldrin	Black bullhead	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	White bass	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
Dieldrin	Black crappie	FRL	Misc. states	0.02-0.36 residue (SB)	--	same as abov.	Henderson,et al (1971), AMIC-1487
Dieldrin	Largescale sucker	FRL	Misc. states	0.01-0.09 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
Dieldrin	Smallmouth bass	FRL	Misc. states	0.03-0.04 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	Northern squawfish	FRL	Misc. states	0.01-0.02 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
Dieldrin	Chiselmouth	FRL	Misc. states	0.01-0.03 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	Rainbow trout	FRL	Misc. states	0.01-0.04 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	Bridgelip sucker	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	Arctic grayling	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	Round whitefish	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
Dieldrin	Longnose sucker	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Dieldrin	Ictalurus punctatus	FRLO	Iowa	0.034-1.6 (accumulation, SB)	--	Edible flesh of fish collected from rivers, lakes, ponds, and reservoirs was analyzed. Fish taken in areas receiving agricultural runoff showed highest accumulation, especially in bottom feeding fish.	Morris, et al (1971), AMIC-1452
Dieldrin	Ictiobus cyprinellus	FRLO	Iowa	0.028-0.84 (accumulation, SB)	--	Same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Cyprinus carpio	FRLO	Iowa	0.015-0.56 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Micropterus salmoides	FRLO	Iowa	0.11-0.08 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Carpiodes sp	FRLO	Iowa	0.313 (accumulation, SB)	--	same as above	Morris et al (1971), AMIC-1452
Dieldrin	Pomoxis nigromaculatus	FRLO	Iowa	0.012 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Pomoxis annularis	FRLO	Iowa	0.059 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Stizostedion vitreum	FRLO	Iowa	0.01-0.86 (accumulation, SB)	--	same as above	Morris,et al (1971), AMIC-1452
Dieldrin	Esox lucius	FRLO	Iowa	0.85 (accumulation, SB)	--	same as above	Morris, et al (1971),AMIC-1452

Dieldrin	Ictalarus melas	FHLO	Iowa	0.098 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Lepomis macrochirus	FHLO	Iowa	0.014-0.034 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Esox lucius	FHLO	Iowa	0.05 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Roccus chrysops	FHLO	Iowa	0.091-0.175 (accumulation, SB)	--	same as above	Morris, et al (1971), AMIC-1452
Dieldrin	Anacystis nidulans	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SH	Metabolic products of Aldrin, Dieldrin, and Endrin can be as toxic as the parent compounds, as shown by QD measurement.	Batterton, et al (1971), AMIC-1471
Dieldrin	Agmenellum quadruplicatum	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SH	same as above	Batterton, et al (1971), AMIC-1471
Dieldrin	Leptodius floridanus (larvae)	L	--	5-10 ppb(K)	--	Zoeal and megalops larval stages were investigated and varying sensitivity at different stages was found, i.e., earlier stages were affected more severely. Sublethal effects on molting and survival were also noted at 0.5 and 1.0 ppb. The author recommended study of toxicity at all life stages to determine better the effect of a pesticide on the animal in its natural environment.	Epifanio (1971), AMIC-2653
Dieldrin	Panopeus herbstii (larvae)	L	--	5-10 ppb (K)	--	same as above	Epifanio (1971), AMIC-2653
Dieldrin	Limnephilus rhombicus (larvae)	FS	Knights Creek, Dun County, Wisc.	0.882(whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1965 from a creek adjacent to an orchard which had been treated in 1963-1965 with various chlorinated hydrocarbon pesticides. No residues were found in water samples. Silt samples contained 0.882-0.813 ppm endrin and	Houbry, et al (1968), AMIC-3793

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						0-0.005 ppm dieldrin. Endrin residues of 0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	
Dieldrin	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.013 (wholebody residue)	--	same as above	Maubry, et al (1968), AMIC-3753
Dieldrin	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.005-0.013 (wholebody residue)	--	same as above	Maubry, et al (1968), AMIC-3753
Dieldrin	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.008-0.014 (whole body residue)	--	same as above	Maubry, et al (1968), AMIC-3753
Dieldrin	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	0.006-0.013 (whole body residue)	--	same as above	Maubry, et al (1968), AMIC-3753
Dieldrin	Cottus bairdi	FS	Knights Creek, Dun County, Wisc.	0.007-0.017 (whole body residue)	--	same as above	Maubry, et al (1968), AMIC-3753
Dieldrin	Rhinichthys atratulus	FS	Knights Creek, Dun County, Wisc.	0 (wholebody residue)	--	same as above	Maubry, et al (1968), AMIC-3753
Dieldrin	Salvelinus fontinalis	FS	Knights Creek, Dun County, Wisc.	0.18-0.26 (fat residue)	--	same as above	Maubry, et al (1968), AMIC-3753
Dieldrin	Semotilus atromaculatus	FS	Knights Creek, Dun County, Wisc.	0.17-0.34 (fat residue)	--	same as above	Maubry, et al (1968), AMIC-3753
Dieldrin	Cottus bairdi	FS	Knights Creek, Dun	0.3-0.7 (fat residue)	--	same as above	Maubry, et al (1968),

			County, Misc.				ANIC-3753
Dieldrin	Rhinichthys atratulus	FS	Knights Creek, Dun County, Misc.	8 (fat residue)	--	same as above	Houbry, et al (1968), ANIC-3753
Dieldrin	Lepomis cyanellus	L	--	0.886 (K9)	a*	The blood and brains of green sunfish that died due to exposure to Dieldrin were analyzed for this chemical. Surviving fish had less Dieldrin in blood and brains than dead fish. Severity of poisoning symptoms also correlated with Dieldrin concentration. Extraction efficiency from blood and brains was quite good (92-95 percent).	Hogan, et al (1971), ANIC-3824
Dieldrin	Lepomis cyanellus	L	--	9.7 (blood residue)	a*	same as above	Hogan, et al (1971), ANIC-3824
Dieldrin	Lepomis cyanellus	L	--	10.3 (brain residue)	a*	same as above	Hogan, et al (1971), ANIC-3824
Dieldrin	Falco peregrinus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.11 (residue)	--	Peregrine falcons, falcon prey, and other predator species were collected widely and analyzed for DDT, DDE, PCB, and a few other pesticides to a lesser degree. PCB and DDT were found to be widely dispersed globally. PCB was found to be a powerful inducer of hepatic enzymes that degrade oestradiol. Reductions in thickness of egg shells, eggshell weight, and water retention occurred. All affect hatching success. The authors state that the peregrine may be the first species entirpated by global contamination.	Risebrough, et al (1968), ANIC-3844
Dieldrin	Aquila chrysaetos (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0847 (residue)	--	same as above	Risebrough, et al (1968), ANIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Dieldrin	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.87-1.6 (fat residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Falco peregrinus (adult)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.31-3.7 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Falco peregrinus (adult)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.44-62.5 (fat residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Endosychura craveri (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.08 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Pelecanus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.06-0.16 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Sula leucogaster (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.04-0.18 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Dieldrin	Falco	F	Western	0.04-0.11	--	same as above	Risebrough,

		peregrinus (immature)		U.S., Pacific Ocean, Panama, Mexico, and Antarctic	(flesh residue)			et al (1968), AMIC-3844
	Dieldrin	Chlamydotheca arcuata	BSCH and A	--	0.00001-0.001 (1700-2600 ppb residue48 wk)	--	The organisms were exposed to 0.01 and 0.1 ppb of the toxicants for 25 weeks after which time the amounts added each week were increased ten-fold over the initial amounts. Ulothrix occurred spontaneously in the test tanks. The results show that chronic accumulations in Chlamydotheca exceeded levels which were toxic in acute tests. Residues in Chlamydotheca ranged from 12,000 to 260,000 times greater than the theoretical concentrations in the water; those in Ulothrix were 234-3,000 times exposure levels.	Kawatski, et al (1971), AMIC-5506
	Dieldrin	Chlamydotheca arcuata	BSCH and A	--	0.0245 (T1)	--	same as above	Kawatski, et al(1971), AMIC-5506
	Dieldrin	Ulothrix sp.	BSCH	--	0.00001-0.001 (1.9-126 ppb residue 33-48 wk)	--	same as above	Kawatski, et al (1971), AMIC-5506
	Dieldrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.35 (83 percentKZ)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al: (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Dieldrin	Tubifex tubifex	FL and BSA	Belzoni, Miss.	6.8 (NTE)	--	same as above	Naqvi, et al (1969), AMIC-5979
Dieldrin	Physa gyrina	FL and BSA	State College, Miss.	8.58 (K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Dieldrin	Physa gyrina	FL and BSA	Belzoni, Miss.	8.58 (K3)	--	same as above	Naqvi, et al(1969), AMIC-5979
Dieldrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	8.35 (20 percent K2)	--	same as above	Naqvi, et al(1969), AMIC-5979
Dieldrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	8.48 (39 percent K2)	--	same as above	Naqvi, et al(1969), AMIC-5979
Dieldrin	Crassostrea virginica (eggs)	L	--	8.64 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of	Davis, et al (1969), AMIC-5998

						selecting chemicals for pest control that would not have serious effect on shellfish.	
Dieldrin	Crassostrea virginica (larvae)	L	--	greater than 10.0 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
Dieldrin	Gambusia affinis (female, 4.3 cm, 1.9 g)	BSA	--	0.031 (T4)	a,c,d,e, e,f,i, (Honolulu tap water)	The five fish species are commonly found in streams and estuaries in semi-tropical areas. G. affinis was the most tolerant. Varied sensitivity to the toxicants were found. K. sandvicensis was the most sensitive fish studied. The standard method procedure was followed.	Nunogawa, et al (1970), AMIC-6567
Dieldrin	Lebistes reticulatus (male, 1.8 cm, 0.2 g)	BSA	--	0.007 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
Dieldrin	Tilapia mossambica (3.4 cm, 1.3 g)	BSA	--	0.010 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
Dieldrin	Kuhlia sandvicensis (4.3 cm, 1.9 g)	BSA	--	0.002 (T4)	a,c,d,e,f, i,salt water	same as above	Nunogawa, et al (1970), AMIC-6567
Dieldrin	Stolephorus purpurea (3.6 cm, 0.4 g)	BSA	--	0.005 (T 12 HR)	a,c,d,e,f, i, salt water	same as above	Nunogawa, et al (1970), AMIC-6567
Dieldrin	Agonus cataphractus	BSA	--	3.3 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Dieldrin	Carcinus maenas	BSA	--	0.01-0.03 (T2)	as(continuous aeration, seawater, and daily	same as above	Portmann, et al (1971), AMIC-7781

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					solution renewal)		
Dieldrin	Cardium edule	BSA	--	greater than 18 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Dieldrin	Crangon crangon	BSA	--	0.81-0.83 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Dieldrin	Freshwater drum	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.84 (whole body residue)	--	Fish from Lake Michigan contained 2 to 7 times more DDT (and DDT analogs) and Dieldrin residues than fish from the other Great Lakes. Fish from Lake Superior invariably had the lowest accumulations of both chemicals. The compounds tended to concentrate in fat (oils). Considerable additional data are presented. The author noted the need to reduce pesticide usage to a minimum and to replace these insecticides with less persistent materials.	Reinert (1978), AMIC-196
Dieldrin	Alewife	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.85-0.97 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
Dieldrin	American smelt	FL	Great Lakes (Ontario,	0.82-0.18 (whole body	--	same as above	Reinert (1978), AMIC-

				Huron, Erie, Superior, Michigan)	residue)			196
	Dieldrin	Bloater	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.03-1.07 (whole body residue)	--	same as above	Reinert (1978),AMIC-196
	Dieldrin	Brown bullhead	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.08 (wholebody residue)	--	same as above	Reinert (1978),AMIC-196
	Dieldrin	Channel catfish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.07 (whole body residue)	--	same as above	Reinert (1978),AMIC-196
	Dieldrin	Coho salmon (flesh)	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.01(whole body residue)	--	same as above	Reinert (1978),AMIC-196
	Dieldrin	Coho salmon (eggs)	FL	Great Lakes (Ontario,	0.04 (whole body residue)	--	same as above	Reinert (1978),AMIC-196

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Huron, Erie, Superior, Michigan)				
Dieldrin	Gizzard shad	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.04-0.09 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
Dieldrin	Kiyi	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.28 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
Dieldrin	Lake herring	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.02-0.07 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
Dieldrin	Lake trout	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.09-1.13 (whole body residue)	--	same as above	Reinert (1978), AMIC-196

Dieldrin	Lake whitefish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.02-0.47 (whole body residue)	--	same as above	Reinert (1978),AMIC-196
Dieldrin	Rock bass	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.02 (whole body residue)	--	same as above	Reinert (1978),AMIC-196
Dieldrin	Round whitefish	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.03 (whole body residue)	--	same as above	Reinert (1978),AMIC-196
Dieldrin	Sea lamprey	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.02 (whole body residue)	--	same as above	Reinert (1978),AMIC-196
Dieldrin	Slimy sculpin	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.03 (whole body residue)	--	same as above	Reinert (1978),AMIC-196
Dieldrin	Nine-spined stickleback	FL	Great Lakes (Ontario,	0.02(whole body residue)	--	same as above	Reinert (1978),AMIC-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Huron, Erie, Superior, Michigan)				196
Dieldrin	Walleye	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.08-0.13 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
Dieldrin	White bass	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.04-0.10 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
Dieldrin	White perch	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.10 (whole body residue)	--	same as above	Reinert (1978), AMIC-196
Dieldrin	White sucker	FL	Great Lakes (Ontario, Huron, Erie, Superior, Michigan)	0.02 (whole body residue)	--	same as above	Reinert (1978), AMIC-196

			Michigan)				
Dieldrin	Yellow perch	FL	Great Lakes (Lake Ontario, LakeHuron, LakeErie, Lake Superior, Lake Michigan)	0.03-0.07 (whole body residue)	--	same as above	Reinert (1978),AMIC-196
Dieldrin	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm,	Worthley, et al (1971), AMIC-3233
Diethyl-DL-tartarate	Pimephales promelas	BSA	--	658.8 (T4)	a°,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969),AMIC-3787
Diethyl fumarate	Pimephales promelas	BSA	--	4.5 (T4)	a°,d,e,o, and Fe	same as above	Bender (1969),AMIC-3787
Diethyl fumarate	Pimephales promelas	ACFA	--	2.8 (T14)	a°,d,e,o, and Fe	same as above	Bender(1969), AMIC-3787
Diethyl maleate	Pimephales promelas	BSA	--	18.8 (T4)	a°,d,e,o, and Fe	same as above	Bender (1969),AMIC-3787
Diethyl succinate	Pimephales promelas	BSA	--	148.8 (T4)	a°,d,e,o, and Fe	same as above	Bender(1969), AMIC-3787
Difolatan	Brachydanio rerio (larvae)	L	--	1.8 (T 38 min)	--	Folpet, Difolatan, and Captan were found to be toxic to zebrafish larvae within 90 min. Difolatan was most toxic while Captan was least toxic. Effects observed were cessation of heartbeat and loss of pigmentation. The authors recommended this as a sensitive, rapid bioassay for these and related compounds.	Abedi, et al(1968), AMIC-3717
Difolatan	Rasbora heteromorpha	ACFA and BSA	--	0.032 (T1)	a°,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Difolatan	Rasbora heteromorpha	BCFA and BSA	--	8.817 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Dimanin	Rasbora heteromorpha	BCFA and BSA	--	3.3 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dimecron	Puntius ticto	--	--	8.41 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Kiofos followed in decreasing order by Sumithion, Malathion, Formithion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	Bhatia (1971), AMIC-5423
Dimethoate	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas(1971) AMIC-1056

Dimethoate	Salmo gairdneri	RCFA and BSA	--	9 (T2)	ae,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-9425
Dimethoate	Carcinus maenas	BSA	--	greater than 3.3 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Dimethoate	Cardium edule	BSA	--	3.3 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Dimethoate	Crangon crangon	BSA	--	0.0883-0.881 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Dimethoate	Pandalus montagui	BSA	--	greater than 0.83 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Dimethylamine	Crangon crangon	BSA	--	greater than 100 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Dimethylphosphorodithoic acid	Pimephales promelas	BSA	--	23.5 (T4)	a*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969), AMIC-3787
Dimethylphosphorodithoic acid	Pimephales promelas	BCFA	--	21.0 (T14)	as,d,e,o, and Fe	same as above	Bender (1969), AMIC-3787
Dimethylphosphorothionic acid	Pimephales promelas	BSA	--	42.5 (T4)	as,d,e,o, and Fe	same as above	Bender (1969), AMIC-3787
Dimethyl formamide	Crangon crangon	BSA	--	greater than 100 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Dimethyl phosphate	Pimephales promelas	BSA	--	18.8 (T4)	a*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender(1969), AMIC-3787

Dimethyl phosphite	Pimephales promelas	BSA	--	225.0 (T4)	a*,d,e,o, and Fe	same as above	Bender(1969), AMIC-3787
Dimethyl 2,3,6-tetrachlorotere phthalate	Phoraidium sabiguum	L	--	0.5-10.0 (33percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
Dimite	Tubifex tubifex	FL and BSA	Belzoni, Miss.	0.58 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al(1969), AMIC-5979
Dinitrobutyl phenol	Gammarus fasciatus	BSA	--	1.8 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978), AMIC-453
Dinitrophenylether	Phoraidium sabiguum	L	--	0.5-10.0 (66 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be	Otto (1978), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Dinocap	Fish (not specified)	--	--	greater than 0.01-0.1 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971), AMIC-1856
Dinocap	Rasbora heteromorpha	RCFA and RSA	--	0.11 (T2)	ap,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dinocap	Rasbora heteromorpha	RCFA and RSA	--	0.07 (T2)	ap,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Dinocap	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971) AMIC-1856

Diphenamid	Gammarus fasciatus	BSA	--	greater than 100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978), AMIC-453
Diphenamid	Paleamontes kadiakensis	BSA	--	58.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Diphenamid	Asellus brevicaudus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Diphenamid	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Diphenamid	Daphnia magna	BSA	--	56.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Diphenamid	Cypridopsis vidua	BSA	--	58.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Diphenamid	Lepomis macrochirus	BSA	--	80.0 (T2)	a*	same as above	Sanders (1978), AMIC-453
Diprarex	Crassostrea virginica (larvae)	L	--	1.8 (T14)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Diquat-dibromide	Salmo gairdneri	BCFA and BSA	--	78 (T2)	a*,c,e,f, hard (HW) or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					SOFT(SW) synthetic dilution water, or seawater for some species	wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Diquat	Callibactis sp. (nymph, 8-12 mm)	BSA	--	16.4 (T4)	ae,be,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	The toxicity of herbicides Diquat and Dichlobenil to aquatic invertebrates and fish was determined in aquaria containing substrates natural to each species. Diquat was quite toxic to H. azteca but not as toxic to other organisms. Dichlobenil was less toxic to H. azetecus but considerably more toxic to the remaining organism than Diquat Mud lessened the toxicity of both, but more so for Diquat. Dichlobenil had a sublethal narcotizing effect on the organisms that resulted in immobilization. It was concluded that both herbicides could adversely affect certain fish food organisms.	Wilson, et al (1969), ANIC-5452
Diquat	Enallagma sp. (naiad, 16-24 mm)	BSA	--	greater than 100 (T4)	ae,be,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), ANIC-5452

	Diquat	Hyalella azteca (adult, 4-8 mm)	BSA	—	8.85 (T4)	as,ba,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452
	Diquat	Libellula sp. (naiad, 16-24 mm)	BSA	—	greater than 100 (T4)	as,ba,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson, et al (1969), AMIC-5452
	Diquat	Limnephilus sp. (larva, 15-20 mm)	BSA	—	33 (T4)	as,ba,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron,	same as above	Wilson, et al (1969), AMIC-5452

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					dissolved solids, conductance		
Diquat	Tendipedidae (larvae, 7-18 mm)	BSA	--	greater than 100 (T4)	ae,be,c,f, i,l, and silica, calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, iron, dissolved solids, conductance	same as above	Wilson,et al (1969), AMIC-5452
Diquat	Roccus saxatilis (fingerlings)	BSA	--	80 (T4)	ae,c,d,e, f,p, and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Diquat	Mya arenaria	F	Nominl Creek, Va.	0.35 (S8)	--	Consistent absence of Diquat in edible parts of clams and oysters was recorded. Residues in integument of clam siphons was believed to be due to soil particles trapped in folds of tissue. No Diquat was found in water due probably to rapid adsorption by silt and bottom mud. Residues persisted for nearly one year in bottom mud.	Haven (1969),AMIC-5978
Diquat	Crassostrea virginica	F	Nominl Creek, Va.	0.35 (S8)	--	same as above	Haven (1969),AMIC-5978

Diquat	Myriophillum spicatum	F	Mosini Creek, Va.	0.35 (48-78 percent K36)	--	same as above	Haven (1969), AMIC-5978
Diquat	Cardius edule	BSA	--	greater than 10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Diquat	Crangon crangon	BSA	--	greater than 10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dispersol SD	Agonus cataphractus	BSA	--	100-330 (T4)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dispersol SD	Crangon crangon	BSA	--	3300-10,000 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Disulfoton	Fish (not specified)	--	--	greater than 1.0-10.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
Diuron	Mercenaria mercenaria (eggs)	L	--	2.5 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected	Davis, et al (1969), AMIC-5998

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Diuron	Mercenaria mercenaria (larvae)	L	--	greater than 5.8 (T12)	--	same as above	Davis, et al (1969), AMIC-5990
Diuron	Gammarus fasciatus	BSA	--	8.78 (T4)	s*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978), AMIC-453
Di-isobutyl phenoxyethoxyethyl dimethyl benzyl ammonium chloride	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
Di-n-butyl tin oxide	Crepidostomum farionis	L	--	150 (oral dose, K1)	--	Capsules containing the tin compound were administered to the trout by force feeding. The tin compound was effective against the intestinal fluke but erythromycin was not. Residue analyses indicated tin was not readily	Mitchum, et al (1969), AMIC-5730

						absorbed by tissue outside the intestinal tract and that the compound was readily eliminated. Tissue residue and retention time studies were recommended for drug clearance purposes.	
Di-n-butyl tin oxide	Salmo aquabonita	L	--	188-688 (oral dose, MTE)	--	same as above	Mitchum, et al (1969), AMIC-5738
DI-Syston	Mercenaria mercenaria (eggs)	L	--	5.28 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
DI-Syston	Mercenaria mercenaria (larvae)	L	--	1.39 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
DI-Syston	Crassostrea virginica (eggs)	L	--	5.86 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
DI-Syston	Crassostrea virginica (larvae)	L	--	3.67 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
DI (N, N diethyl cocoamine salt of endothall (ethyl bis) (2-ethylhexyl) phosphinate7-oxabicy clo (2.2.1) heptane-2,3-dicarbox ylic acid)	Pheraidium ambiguum	L	--	0.5-10.0 (MTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005% ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
DI (N, N diethyl tridecyl amine) salt of endothall	Pheraidium ambiguum	L	--	0.5-10.0 (0 percent growth inhibited 14)	--	same as above	Otto (1978), AMIC-892
DMOC	Fish (not	--	--	greater than	--	Approximate toxicities of	Mowdesley-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	specified)			1.8-18.8 (K)		numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Thomas (1971), AMIC-1095
Debs JN	Carcinus maenas	BSA	--	greater than 100 (T2)	ae(continuous aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Debs JN	Cardium edule	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Debs JN	Crangon crangon	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Debs JN	Pandalus montagui	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Debs BSS	Carcinus maenas	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution	same as above	Portmann, et al (1971), AMIC-7701

					renewal)		
Dobs 855	Cardium edule	BSA	--	34.3 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7701
Dobs 855	Crangon crangon	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7701
Dobs 855	Pandalus montaqui	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971). AMIC-7701
Dobs 855	Platichthys flesus	BSA	--	10-30 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7701
Dodine acetate	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawksley-Thomas(1971) AMIC-1054
Dowicide A	Mercenaria mercenaria (eggs)	L	--	greater than 10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval	Davis, et al (1969). AMIC-5999

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Dowicide A	Mercenaria mercenaria (larvae)	L	--	0.75 (T12)	--	same as above	Davis, et al (1969), AMIC-5999
Dowicide G	Mercenaria mercenaria (eggs)	L	--	less than 0.25 (T2)	--	same as above	Davis, et al (1969), AMIC-5999
Dowicide G	Mercenaria mercenaria (larvae)	L	--	less than 0.25(T12)	--	same as above	Davis, et al (1969), AMIC-5999
Dowpon	Rashora heteromorpha	BCFA and BSA	--	204 (T2)	as,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Dowpon	Salmo gairdneri	BCFA and BSA	--	179 (T2)	as,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425

Dexcide (C102)	Carcinus maenas	BSA	--	500 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Dexcide (C102)	Cardium edule	BSA	--	greater than 500 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dexcide (C102)	Crangon crangon	BSA	--	greater than 500 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Dexcide (C102)	Pandalus montagui	BSA	--	greater than 500 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
DSS	Fundulus heteroclitus	BSA	--	4.5 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, OO, CI, OD, AQ, PC, HH, TN, OP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Molluscs and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DD	Fundulus heteroclitus	BSA	--	0.0085 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al (1970), AMIC-445
DD	Nereis virens	BSA	--	0.0002-0.001 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
DSS	Nereis virens	BSA	--	13.5 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al(1970), AMIC-445
DTMC	Palaemonetes kadiakensis (adult)	BCF	--	0.07 (residue)	a*	Magnification of DDT and Aldrin tagged with C-14 occurred rapidly. Biological magnification factors of 2900 to 114,100 depending on the species were found for DDT, and 22,800 to 141,300 for Aldrin. Marked degradation of DDT as determined by analysis for DDT metabolites occurred. The authors conclude that aquatic invertebrates influence quality and quantity of insecticide residue passed via the fish food chain.	Johnson, et al(1971), AMIC-3820
DTMC	Libellula sp. (naiad)	BCF	--	0.01 (residue)	a*	same as above	Johnson, et al (1971),AMIC-3820
DTMC	Palaemonetes kadiakensis (adult)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
DTMC	Libellula sp. (naiad)	BCF	--	0.0001 (SB3)	a*	same as above	Johnson,et al (1971), AMIC-3820
Dursban	Tubifex tubifex	FL and BSA	Reizoni, Miss.	2.8 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species.	Naqvi, et al(1969), AMIC-5979

						Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	
Dylox	Roccus saxatilis (fingerlings)	BSA	--	5.2 (T4)	a*,c,d,e,f,p and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
O.B. Granular	Salmo gairdneri	BCFA and BSA	--	2,050 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater forsome species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Ecanal 13846	Rasbora heteromorpha	BCFA and BSA	--	8.19 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
EC-98	Rasbora heteromorpha	BCFA and BSA	--	1.2 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
EC-90	Rasbora heteromorpha	BCFA and BSA	--	1.2 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Emcol H-146 (80 percent plus 20 percent Emcol H-588X)	Rasbora heteromorpha	BCFA and BSA	--	18 (T2)	ae,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Emcol 782	Rasbora heteromorpha	BCFA and BSA	--	6.8 (T2)	ae,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
EMID	Crassostrea virginica	L	--	16.8 (T2)	--	The effect of 52 pesticides on embryonic development of clams and	Davis, et al (1964),

	(eggs)					oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	AMIC-5998
ENID	Crassostrea virginica (larvae)	L	--	38.8 (T14)	--	same as above	Davis, et al (1969), AMIC-5999
Explan	Crangon crangon	BSA	--	100-330 (T4)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Exxon spill wash	Crangon crangon	BSA	--	1.0-3.3 (T4)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Emulsifier blend 350	Crangon crangon	BSA	--	100-330 (T4)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Endosulfan	Fish (not specified)	--	--	greater than 0.000001-0.0001 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mandeley-Thomas (1971 AMIC-1056

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Endosulfan	Rasbora heteromorpha	BCFA and BSA	--	0.000003 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Endosulfan	Agonus cataphractus	BSA	--	0.03-1.8 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most publis.ed data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Endosulfan	Cardium edule	BSA	--	greater than 10 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Endosulfan	Crangon crangon	BSA	--	0.01 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Endothall	Rasbora heteromorpha	BCFA and BSA	--	468 (T2)	a*,c,e,f, hard (HW) or soft (SW) syn-	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders	Alabaster (1969), AMIC-5425

					thetic dilution water, or seawater for some species	of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Endothall	Mercenaria mercenaria (eggs)	L	--	51.8 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969),AMIC-5998
Endothall	Mercenaria mercenaria (larvae)	L	--	12.5 (T12)	--	same as above	Davis, et al (1969),AMIC-5998
Endothall	Crassostrea virginica (eggs)	L	--	28.2 (T2)	--	same as above	Davis, et al (1969),AMIC-5998
Endothall	Crassostrea virginica (larvae)	L	--	48.1 (T14)	--	same as above	Davis, et al (1969),AMIC-5998
Endothal	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971),AMIC-1056
Endrin	Fish (not specified)	--	--	greater than 0.0001-0.001 (K)	--	same as above	Hawdesley-Thomas(1971), AMIC-1056
Endrin	Anacystis nidulans	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SM	Metabolic products of Aldrin, Dieldrin, and Endrin can be as toxic as the parent compounds, as shown by DO measurement.	Batterton,et al (1971).

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-1471
Endrin	Aqmenellum quadruplicatum	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SH	same as above	Batterton, et al (1971), AMIC-1471
Endrin	Salvelinus fontinalis (1.15 g)	BCFA	--	0.355 (T4)	ae,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	Four insecticides were evaluated on four fish species at two body weights. Standard method bioassay procedures were followed. Symptomology was also reported. Generally, toxicity was significantly different at the two body weights, i.e., more toxic at the lower body weight, except for Malathion. Well-defined experimental conditions were said to result in truer measurement of toxicity.	Post, et al (1971), AMIC-1812
Endrin	Salvelinus fontinalis (2.84 g)	BCFA	--	0.59 (T4)	ae,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Endrin	Salmo clarki (0.37 g)	BCFA	--	0.00001 (T4)	ae,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Endrin	Salmo clarki (1.38 g)	BCFA	--	0.00002 (T4)	ae,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Endrin	Salmo gairdneri (1.74 g)	BCFA	--	0.0004 (T4)	ae,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812

Endrin	Limnephilus rhombicus (larvae)	FS	Knights CRFEK, DunCounty, Wisc.	0.003 (whole body residue)	--	Samples of water, silt, bottom debris, bottom organisms, and fish were taken in 1966 from a creek adjacent to an orchard which had been treated in 1963-1965 with various chlorinated hydrocarbon pesticides. No residues were found in water samples. Silt samples contained 0.002-0.013 ppm endrin and 0-0.005 ppm dieldrin. Endrin residues of 0.011-0.025 ppm and 0.002-0.006 ppm dieldrin were found in debris samples. Despite limited control data, residue analyses indicated that contamination of the environment studied was limited.	Maubry, et al (1968), AMIC-3753
Endrin	Sialis sp. (larvae)	FS	Knights Creek, Dun County, Wisc.	0.009 (wholebody residue)	--	same as above	Maubry, et al (1968), AMIC-3753
Endrin	Gammarus sp.	FS	Knights Creek, Dun County, Wisc.	0.013-0.025 (wholebody residue)	--	same as above	Maubry, et al (1968), AMIC-3753
Endrin	Pteophalas promelas	BCFA	--	0.25 ppb (T4)	a*,e	LAS acted synergistically with parathion to cause less survival of fatheds but had an indeterminate effect with DDT and no synergistic effect with Endrin.	Solon, et al (1969), AMIC-3785
Endrin	Carassius auratus	BCF	--	0.0043 (oral dose per day, 38 4 ae)	a*,c,e	No effects were noted at lower concentrations while higher doses caused some mortality, lowered growth rate, decreased thyroid cell height, decreased gametogenesis, lowered total body fat, less vacuolization of liver cells, elevated serus Na concentrations, osmo-regulatory disturbance, and other effects. The authors note that sublethal	Grant, et al (1978), AMIC-3826
Endrin	Oncorhynchus kisutch (1.58 g)	BCFA	--	0.76 (T4)	aa,a,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						effects could adversely affect fish populations.	
Endrin	Endomychura craveri (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.17 (residue)	--	Peregrine falcons, falcon prey, and other predator species were collected widely and analyzed for DDT, DDE, PCB, and a few other pesticides to a lesser degree. PCB and DDT were found to be widely dispersed globally. PCB was found to be a powerful inducer of hepatic enzymes that degrade oestradiol. Reductions in thickness of egg shells, eggshell weight, and water retention occurred. All affect hatching success. The authors state that the peregrine may be the first species entirgated by global contamination.	Risebrough, et al (1968), AMIC-3844
Endrin	Pelecanus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.87-1.13 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Endrin	Sula leucogaster (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.81-0.86 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Endrin	Pandion haliaetus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.25 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
Endrin	Gambusia affinis (resistant)	L	--	0.09-0.4 (50 3 hr)	--	Endrin resistant mosquitofish exhibited no consistent change in rate of oxygen consumption. The susceptible strain had decreased oxygen consumption	McIngvale, et al (1968), AMIC-5479

						at higher concentrations. Some mortality occurred at .02-.075 ppm in susceptible fish and at .48 ppm in the resistant strain.	
	Endrin	Gambusia affinis (susceptible)	L	--	0.00001-0.2 (SB 3 hr)	--	same as above	McKenzie, et al (1968), AMIC-9475
	Endrin	Pimephales promelas (3 cm)	RSA	--	0.00077 (T2)	ca,o,o,f, k,i,n, and mag-nesium, sulfates, iron, calcium	Bioassays conducted simultaneously indicated that DDT was considerably more toxic to fathead minnows under static conditions than under continuous flow conditions. Decreasing oxygen and increasing metabolites may have enhanced DDT toxicity. An identical study with Endrin resulted in only slightly higher toxicity under continuous flow conditions. Average pH, oxygen, and ammonia nitrogen were followed throughout the experiments. The results were comprehensively discussed taking into consideration many contributing factors.	Linder, et al (1978), AMIC-9589
	Endrin	Pimephales promelas (1 cm)	RCFA	--	0.00057 (T2)	ca,o,o,f, k,i,n, and mag-nesium, sulfates, iron, calcium	same as above	Linder, et al (1978), AMIC-9589
	Endrin	Palaemonetes kadiakensis (resistant)	RSA	--	0.0028-0.0137 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; least toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1978), AMIC-9519
	Endrin	Palaemonetes	RSA	--	0.0009 (T1)	a*	same as above	Naqvi, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	kadiakensis (non-resistant)						(1978), ANIC-5919
Endrin	Gambusia affinis (resistant)	L	--	0.5-2 (586-9)	--	Resistant mosquitofish were exposed to Endrin for varying periods of time then fed to susceptible green sunfish. Other experimental variables were studied. Edible portions of sunfish exposed to sublethal concentrations of Endrin for short periods of time contained up to 26 ppm of this chemical. The authors note that zero tolerances have been established for Endrin and that these fish would be rendered unfit for human consumption in the event of Endrin spillage.	Ferguson, et al (1967), ANIC-5976
Endrin	Gambusia affinis (resistant)	L	--	24.9-1842 (whole body residue)	--	same as above	Ferguson, et al (1967), ANIC-5976
Endrin	Lepomis cyanellus (susceptible)	L	--	greater than 1 (44 percent K5)	--	same as above	Ferguson, et al (1967), ANIC-5976
Endrin	Lepomis cyanellus (susceptible)	L	--	0.4-0.9 (whole body residue)	--	same as above	Ferguson, et al (1967), ANIC-5976
Endrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and RSA	State College, Miss.	0.88 (85 percent K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals	Naqvi, et al (1969), ANIC-5979

						of higher trophic levels.	
Endrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.88 (20 percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979
Endrin	Tubifex tubifex	FL and BSA	Belzoni, Miss.	6.8 (NTE)	--	same as above	Naqvi, et al (1969), AMIC-5979
Endrin	Physa gyrina	FL and BSA	State College, Miss.	0.55 (K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Endrin	Physa gyrina	FL and BSA	Belzoni, Miss.	0.55 (20 percent (K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Endrin	Eupera singleyi	FL and BSA	State College, Miss.	0.875 (K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Endrin	Lepomis macrochirus	BSA	--	0.0881 (S81)	a*c,e	In a flow-through respirometer, the sublethal dosage caused increased oxygen consuption while the lethal dosage decreased it. Exercise had no effect on oxygen consumption but affected mucus production and hastened death. Symptomology of Endrin treatment included high excitability, loss of body color, increased opercular activity, convulsionary loss of equilibrium, short quiescience periods, and body hemorrhage. Unexercised fish treated with 0.881 ppm Endrin began to die two weeks after treatment.	Huner, et al (1967), AMIC-5981
Endrin	Lepomis macrochirus	BSA	--	0.881 (K1)	a*,c,e	same as above	Huner, et al (1967), AMIC-5981

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Endrin	Crassostrea virginica (eggs)	L	--	0.79 (T2)	--	same as above	Davis, et al (1969), AMIC-5999
Endrin	Crassostrea virginica (larvae)	L	--	greater than 10.0 (T14)	--	same as above	Davis, et al (1969), AMIC-5999
Endrin	Lepomis macrochirus	BSA	--	0.001-0.002 (K)	a	Lab. tests were followed by tests in ponds to eradicate fish. Endrin toxicity persisted in one pond study (46 ppb) even after the pond had been emptied and refilled twice. In ponds, Endrin toxicity varied widely. The author stated that this chemical was too dangerous for use as a pesticide except in extremely isolated instances.	McReynolds (1969), AMIC-188
Endrin	Lepomis microlophus	BSA	--	0.001-0.002 (K)	a	same as above	McReynolds (1969), AMIC-188
Endrin	Lepomis macrochirus	FP	Driftwood Farm Ponds, Indiana	0.004 (K2)	a	same as above	McReynolds (1969), AMIC-188
Endrin	Lepomis macrochirus	FP	Driftwood Farm Ponds, Indiana	0.001 (K21)	a	same as above	McReynolds (1969), AMIC-188
Endrin	Lepomis macrochirus	FP	Driftwood Farm Ponds, Indiana	0.046 (K1)	a	same as above	McReynolds (1969), AMIC-188
Endrin	Lepomis macrochirus	BCFA	--	0.002 (T1)	--	Endrin absorbed by bluegill in lethal and sublethal exposures was determined by electron capture gas chromatography. Absorption was measured at varying times up to 24 hr. The authors stated that a temporary decrease in absorption at the sublethal concentration level suggests the fish were metabolizing and excreting the Endrin.	Bennett, et al (1970), AMIC-195

Endrin	Lepomis macrochirus	BCFA	--	0.0002 (SB1)	--	same as above	Bennett,et al (1978),AMIC-195
Endrin	Lepomis macrochirus	BCFA	--	0.000Z (0.84-0.13 ppa muscle residue)	--	same as above	Bennett, et al (1978), AMIC-195
Endrin	Lepomis macrochirus	BCFA	--	0.000Z (0.60-0.78 ppa gut residue)	--	same as above	Bennett, et al (1978), AMIC-195
Endrin	Lepomis macrochirus	BCFA	--	0.0002 (0.80-1.0 ppa liver residue)	--	same as above	Bennett, et al (1978), AMIC-195
Endrin	Lepomis macrochirus	BCFA	--	0.000Z (0.60-0.30 ppa whole body residue)	--	same as above	Bennett, et al (1978), AMIC-195
Endrin	Cyprinodon variegatus (50-70 mm)	BSA	--	0.001 (K)	a°, seawater	Sensitivity of three generations of sheepshead minnows to DDT and Endrin was determined. Sensitivity to DDT varied seasonally. Fish were bred in ponds 15m X 5m X 1.25m exposed to pesticides in aquaria, and survivors used for breeding. The results for DDT were not entirely clear due to the seasonal variability. Increased and decreased sensitivity were recorded for the F1 generation at different times, increased sensitivity for the F2, and decreased for the F3. The authors stated that incorporation of DDT in ova via lipids may have caused increased sensitivity. Endrin toxicity was decreased in the F1 and increased in the F2 generation.	Holland, et al (1978), AMIC-726
Epichlorhydrin	Rasbora heteromorpha	BCFA and BSA	--	36 (T2)	a°,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true.	Alabaster (1969), AMIC-5424

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Testing the actual material as sold was found to be essential.	
Eptam	Gammarus fasciatus	BSA	--	23.8 (T4)	s*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Eserine sulfate	Negaprion brevirostris (1-3 kg)	BSA	--	11 (NTE 3 hr)	s,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge(1969), AMIC-3832
Essolvene	Carcinus maenas	BSA	--	10-33 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Essolvene	Cardium edule	BSA	--	33-100 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Essolvene	Crangon crangon	BSA	--	10 (T2)	as(continuous aeration, seawater, and	same as above	Portmann, et al (1971), AMIC-7701

						daily solution renewal)		
	Essolvene	Ostrea edulis	BSA	--	33-100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Essolvene	Pandalus montaqui	BSA	--	10 (T2)	ae(continuous aeration, seawatqr, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Esso solvent FG-155	Crangon crangon	BSA	--	10-33 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
	Ethanediol	Crangon crangon	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
	Ethanolamine	Crangon crangon	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Ethanol	Betta splendens	L	--	2850 (SS 6 hr)	a*	The effects of ethanol and bourbon on the aggressive response of Siamese fighting fish were determined. Ethanol increased alli show (aggressiveness) and bourbon and bourbon congeners decreased it. The authors tentatively concluded that the delayed effect of the congener resulted from involvement of a different physiological mechanism and that this may be related to hangover effects in man.	Raynes, et al (1968), AMIC 5712
Ethion	Pesbora heteromorpha	RCFA and BSA	--	0.52 (T2)	aa,a,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Ethion	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.58 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969), AMIC-5979
Ethoxeen S-25	Pesbora heteromorpha	RCFA and BSA	--	0.35 (T2, hardwater)	aa,a,e,f, hard (HW) or soft (SW) syn-	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425

					thetic dilution water, or seawater for some species		
Ethomeen S-25	Pesbora heteromorpha	HCFA and BSA	--	8.68 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1959), AMIC-5425
Ethylene phosphite	Pimephales promelas	BSA	--	34.8 (T4)	a*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender(1969), AMIC-3787
Ethyl parathion	Cardium edule	BSA	--	3.3-18 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Ethyl parathion	Crangon crangon	BSA	--	0.003-0.01 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
E-314	Steelhead trout (fingerlings)	BSA	--	22.5 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity	Tracy, et al (1969), AMIC-3834

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						with fair to good oil dispersion capability.	
E-314	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	0.01 (K)	--	same as above	Tracy, et al (1969), AMIC-383A
Fenac (Na salt)	Gammarus fasciatus	BSA	--	greater than 100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Fenac (Na salt)	Paleomontes kadiakensis	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders(1970), AMIC-453
Fenac (Na salt)	Asellus brevicaudus	BSA	--	greater than 100.0(T2)	a*	same as above	Sanders(1970), AMIC-453
Fenac (Na salt)	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Fenac (Na salt)	Daphnia magna	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Fenac (Na salt)	Cyprinodonis vidua	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970),AMIC-453
Fenac (Na salt)	Lepomis macrochirus	BSA	--	19.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Fenoprop	Rasbora heteromorpha	RCFA and BSA	--	37 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a	Alabaster (1969), AMIC-342S

					for some species	mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Fentin acetate	Pandalus montagui	BSA	--	greater than 33 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Fenuron	Mercenaria mercenaria (eggs)	L	--	greater than 10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al(1969), AMIC-5998
Fenuron	Mercenaria mercenaria (larvae)	L	--	greater than 5.0 (T12)	--	same as above	Davis, et al(1969), AMIC-5999
Ferric chloride	Carassius auratus	L	--	5-10 (K4)	--	Iron salts were most harmful immediately after dissolving, resulting in gill blockage (reversible), absorption in digestive tract, and iron precipitates in epithelium and renal tubules.	Ashley (1970),AMIC-5436
Ferric sulfate	Carassius auratus	L	--	5-10 (K4)	--	same as above	Ashley (1970), AMIC-5436
Ferrous chloride	Carassius auratus	L	--	5-10 (K4)	--	same as above	Ashley(1970), AMIC-5436
Ferrous sulfate (as Fe)	Acroneuria	BSA	--	16 (T9)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that	Warnick, et al(1969), AMIC-3767

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						aquatic insects may not be as sensitive to heavy metals as fish.	
Ferrous sulfate (as Fe)	Ephemerella	BSA	--	0.32 (T4)	a*,c,d,e,f	same as above	Warnick, et al (1969), AMIC-3767
Ferrous sulfate (as Fe)	Hydropsyche	BSA	--	16 (T7)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Ferrous sulfate	Carassius auratus	L	--	5-10 (K4)	--	Iron salts were most harmful immediately after dissolving, resulting in gill blockage (reversible), absorption in digestive tract, and iron precipitates in epithelium and renal tubules.	Ashley (1970), AMIC-943A
Finasol ESK	Crangon crangon	BSA	--	100-330 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Finasol OSR2	Crangon crangon	BSA	--	3300 (T4)	aa(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Finasol SC	Crangon crangon	BSA	--	33-100 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Flock e.p. Fly dip	Pasbora	BCFA	--	0.73 (T2)	a*,c,e,f,	One hundred sixty-four	Alabaster,

	heteromorpha	and BSA			hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	(1969),AMIC-5425
Fluorescein sodium	Salmo gairdneri	BSA	—	1,372 (T4)	a°	The dyes Rhodamine B and Fluorescein sodium were found to be relatively non-toxic in pon concentrations while antimycin was toxic at ppb levels. The author states that neither dye at field use concentrations should significantly influence the activity of Antimycin A against fish.	Marking (1969), AMIC-5729
Fluorescein sodium	Ictalurus punctatus	BSA	—	2,267 (T4)	a°	same as above	Marking (1969),AMIC-5729
Fluorescein sodium	Lepomis macrochirus	BSA	—	3,433 (T4)	a°	same as above	Marking (1969),AMIC-5729
Fluorokil	Rasbora heteromorpha	BCFA and BSA	—	3,588 (T2)	a°,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Fluorokil	Salmo gairdneri	BCFA and BSA	—	1,888 (T2)	a°,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater	same as above	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					for some species		
Fluorokil	Platessa vulgaris	BCFA and BSA	--	1,200 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-9425
Folizoil	Cardium edule	BSA	--	33-100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Folizoil	Crangon crangon	BSA	--	330-1000 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Folpet	Brachydanio rerio (larvae)	L	--	1.8 (* 30 min)	--	Folpet, Difolatan, and Captan were found to be toxic to zebrafish larvae within 90 min. Difolatan was most toxic while Captan was least toxic. Effects observed were cessation of heartbeat and loss of pigmentation. The authors recommended this as a sensitive, rapid bioassay for these and related compounds.	Abedi,et al (1968), AMIC-3717
Formaldehyde	Salmo gairdneri	BCFA and BSA	--	50 (T2)	a*,c,e,f, hard (HW) or soft	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a	Alabaster (1969), AMIC-9425

						(SW) synthetic dilution water, or seawater for some species	wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
	Formaldehyde	Salmo trutta	BCFA and BSA	--	58 (T2)	s*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
	Formaldehyde	Crangon crangon	BSA	--	330-1000 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
	Formaldehyde	Platichthys flesus	BSA	--	100-330 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Formalin	Salmo gairdneri	L	--	200-400 (SD, 4-6 hr)	f	Caudal arterial blood samples were taken at selected time intervals and evaluated for acid-base balance and for gill, kidney, and liver function by measuring O2 consumption, total CO2, HCO3, Cl(minus), Ca(2 plus), bilirubin, whole blood pH, and Vitamin C depletion. Formalin treatments seemed to be a more severe stress to rainbow seiscff ptele data and discussion are presented.	Wedemeyer (1971), AMIC-3287

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Formalin	Oncorhynchus kisutch	L	--	200-400 (SB, 4-6 hr)	f	same as above	Wedemeyer (1971), AMIC-3287
Formalin	Trachinotus carolinus (juvenile)	BSA	--	69.1-74.9 (T4)	a,c,e,f,i, and sulfate, sodium, calcium, potassium, magnesium, carbonate, bicarbonate, salinity	In this study of ampane salinity was controlled at 10, 20, and 30 ppt and investigated as a variable. Acriflavin, formalin, and potassium permanganate were slightly more toxic at the highest salinity, while copper sulfate was slightly less toxic. These compounds are used as prophylactic bacterial treatments. All appeared to be reasonably safe to use except possibly potassium permanganate.	Birdsong, et al (1971), AMIC-5578
Formalin	Roccus saxatilis (fingerlings)	BSA	--	18 (T4)	aa,c,d,e, f,p, and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Formic acid	Carcinus maenas	BSA	--	80-98 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Fornethion	Puntius ticto	--	--	0.165 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Klafos followed in decreasing order by Sumithion, Malathion, Fornethion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	Bhatia (1971), AMIC-5423
Fornethion	Rasbora heteromorpha	BCFA and BSA	--	1.2 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude.. Knowing the toxicity and	Alabaster (1969), AMIC-5425

						dilution water, or seawater for some species	percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
	Furfural	Rasbora heteromorpha	BCFA and BSA	--	23 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
	P.O. 180-B	Steelhead trout (fingerlings)	BSA	--	65.8 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
	P.O. 300-B	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	4.0 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
	Gaston CW	Cardium edule	BSA	--	33-188 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
	Gaston CW	Pandalus montagui	BSA	--	18-33 (T2)	ae(continuous aeration, seawater, and daily solution	same as above	Portmann, et al (1971), AMIC-7781

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					renewal)		
Gamlen D	Cardium edule	BSA	--	33 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamlen D	Crangon crangon	BSA	--	18 (T2)	as(continuous aeration, sea water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamlen D	Pandalus montequi	BSA	--	18 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamlen OSR	Carcinus maenas	BSA	--	18-33 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Gamlen OSR	Cardium edule	BSA	--	18-33 (T2)	as(continuous aeration, seawater, and daily	same as above	Portmann, et al (1971), AMIC-7701

						solution renewal)		
	Gamlen OSR	Crangon crangon	BSA	--	18 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Gamlen OSR	Ostrea edulis	BSA	--	15-55 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Gamlen PBX	Crangon crangon	BSA	--	338-1888 (T4)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Gamlen WBX	Crangon crangon	BSA	--	188-338 (T4)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Gamma BHC	Pasbora heteromorpha	BCFA and BSA	--	8.845 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was	Alabaster (1969), AMIC-5625

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						found to be essential.	
Gesapax	Pandalus montaqui	BSA	--	33 (T2)	ae(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Globe terramycin pet tabs	Roccus saxatilis (fingerlings)	BSA	--	178 (T4)	ae,c,d,e, f,p, and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-4723
Gloquat C	Crangon crangon	BSA	--	100-300 (T2)	ae(continuous aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Gramoxone W (J.F. 1137)	Rasbora heteromorpha	BCFA and BSA	--	17 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Gramoxone W (J.F. 1137)	Rasbora heteromorpha	BCFA and BSA	--	46 (T2, softwater)	s*,c,e,f, hard (HW) or soft (SW) synthetic dilution	same as above	Alabaster (1969), AMIC-5425

					water, or seawater for some species		
Gramexone (J.F. 1341)	Rasbora heteromorpha	BCFA and BSA	--	578 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Gramexone (J.F. 1341)	Rasbora heteromorpha	BCFA and BSA	--	288 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Griseofulvin	Mercenaria mercenaria (eggs)	L	--	less than 0.25 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al(1969), AMIC-5990
Griseofulvin	Mercenaria mercenaria (larvae)	L	--	less than 1.0 (T12)	--	same as above	Davis, et al(1969), AMIC-5990
Gulf agent 1009	Crangon crangon	BSA	--	330 (T4)	a*(continuous aeration, seawater, and daily solution	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most	Portmann, et al (1971), AMIC-7781

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					renewal)	published data of this type deal with toxicity of chemicals to freshwater organisms.	
Guthion	Ictalurus punctatus	BSA	--	3.29 (T4)	a, synthetic testwater	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	Macek, et al(1978), AMIC-5518
Guthion	Ictalurus melas	BSA	--	3.58 (T4)	a, synthetic test water	same as above	Macek, et al(1978), AMIC-5518
Guthion	Carassius auratus	BSA	--	4.27 (T4)	a, synthetic test water	same as above	Macek, et al (1978), AMIC-5518
Guthion	Cyprinus carpio	BSA	--	0.695 (T4)	a, synthetic test water	same as above	Macek, et al(1978), AMIC-5518
Guthion	Pimephales promelas	BSA	--	0.295 (T4)	a, synthetic test water	same as above	Macek, et al(1978), AMIC-5518
Guthion	Lepomis macrochirus	BSA	--	0.822 (T4)	a, synthetic test water	same as above	Macek, et al(1978), AMIC-5518
Guthion	Lepomis microlophus	BSA	--	0.852 (T4)	a, synthetic test water	same as above	Macek, et al(1978), AMIC-5518

Guthion	Micropterus salmoides	BSA	--	0.005 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5518
Guthion	Salmo gairdneri	BSA	--	0.014 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5513
Guthion	Salmo trutta	BSA	--	0.004 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5518
Guthion	Oncorhynchus kisutch	BSA	--	0.017 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5518
Guthion	Perca flavescens	BSA	--	0.013 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5518
Guthion	Palaemonetes kadiakensis (resistant)	BSA	--	0.0044-0.0168 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; least toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1970), AMIC-5519
Guthion	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0089 (T1)	a*	same as above	Naqvi, et al (1970), AMIC-5519
Guthion	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.00 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant	Naqvi, etal (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	
Guthion	Mercenaria mercenaria (eggs)	L	--	0.86 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Guthion	Mercenaria mercenaria (larvae)	L	--	0.86 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
Guthion	Crassostrea virginica (eggs)	L	--	0.62 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
Heptachlor epoxide	Brown bullhead	FRL	Misc. states	0.34 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 98 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson, et al (1971), AMIC-1487
Heptachlor epoxide	Carp	FRL	Misc. states	0.84 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
Heptachlor epoxide	Channel catfish	FRL	Misc. states	0.83 residue (SB)	--	same as above	Henderson, et al

							(1971), ANIC-1487
Heptachlor epoxide	Smallmouth buffalo	FRL	Misc. states	0.16 residue (SB)	--	same as above	Henderson, et al (1971), ANIC-1487
Heptachlor epoxide	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.09 (whole body residue)	--	Peregrine falcons, falcon prey, and other predator species were collected widely and analyzed for DDT, DDE, PCB, and a few other pesticides to a lesser degree. PCB and DDT were found to be widely dispersed globally. PCB was found to be a powerful inducer of hepatic enzymes that degrade oestradiol. Reductions in thickness of egg shells, eggshell weight, and water retention occurred. All affect hatching success. The authors state that the peregrine may be the first species entirpated by global contamination.	Risebrough, et al (1968), ANIC-3844
Heptachlor epoxide	Falco peregrinus (adult)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.18-1.0 (whole body residue)	--	same as above	Risebrough, et al (1968), ANIC-3844
Heptachlor	Gizzard shad	FRL	Misc. states	0.45 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson, etal (1971), ANIC-1487
Heptachlor	Blue catfish	FRL	Misc. states	0.22 residue (SB)	--	same as above	Henderson, etal (1971), ANIC-1487
Heptachlor	Rasbora heteromorpha	BCFA and BSA	--	0.05 (T2)	am,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a	Alabaster (1969), ANIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					for some species	mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Heptachlor	Lepomis cyanellus (Resistant)	BSA	--	1.98 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant fish were compared to susceptible ones collected at Starkville.	Minchew, et al(1978), AMIC-5471
Heptachlor	Lepomis cyanellus (Susceptible)	BSA	--	0.07 (T2)	a*	same as above	Minchew, et al(1978), AMIC-5471
Heptachlor	Notemigonus crysoleucas (Resistant)	BSA	--	2.34 (T2)	a*	same as above	Minchew, etal (1978), AMIC-5471
Heptachlor	Notemigonus crysoleucas (Susceptible)	BSA	--	0.49 (T2)	a*	same as above	Minchew, etal (1978), AMIC-5471
Heptachlor	Palaemonetes kadiakensis (resistant)	BSA	--	0.169-0.273 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion:	Naqvi, et al (1978), AMIC-5519

						medium toxicity. Guthion, Lindane, Toxaphene, Strobane† less toxic Chlordane, Sevin, and Heptachlor.	
Heptachlor	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0406 (T1)	a*	same as above	Naqvi, et al (1978), AMIC-5519
Heptachlor	Heteropneustes fossilis	L	--	1.0 (SB 2 hr,K 44 hr)	--	Epidermal lesions of catfish barbels were moderate to severe after exposure noted. Barbel curling and inactivation were associated effects.	Konar (1969), AMIC-5726
Heptachlor	Amphipnous cuchia	BSA	--	2.8 (K3)	a,c,d,e,f	All bioassay animals were collected locally apparently near Muzaffarpur, Bihar, India. The bioassay consisted of a simple jar (8-liter) with daily solution renewal (except for plankton studies in which solutions were not renewed). A safe application rate of 0.813 lb/acre was suggested for survival of most aquatic species.	Konar (1978), AMIC-448
Heptachlor	Anabus testudineus	BSA	--	0.5 (K3)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Channa punctatus (fry)	BSA	--	0.001 (K11)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Channa punctatus (adult)	BSA	--	2.8 (K2)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Esomus danrica	BSA	--	0.2 (K4)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Heteropneustes fossilis (fry)	BSA	--	0.016 (K2)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Heteropneustes fossilis (adult)	BSA	--	1.8 (K2)	a,c,d,e,f	same as above	Konar (1978), AMIC-448

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-448
Heptachlor	Daphnia	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1978),AMIC-448
Heptachlor	Diaptomus	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Gastrotricha	BSA	--	0.1 (NT)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Nauplius	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Pandorina	BSA	--	0.001 (K)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Volvox	BSA	--	0.001 (K)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Anisoptera (nymphs)	BSA	--	0.01 (K5)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Belostoma indica	BSA	--	2.0 (K3)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Cybister sp.	BSA	--	0.1 (K3)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Dytiscus sp. (larvae)	BSA	--	0.05 (K2)	a,c,d,e,f	same as above	Konar (1978),AMIC-448
Heptachlor	Dytiscus sp. (adult)	BSA	--	0.1 (K3)	a,c,d,e,f	same as above	Konar (1978), AMIC-448

Heptachlor	Hydrochlius sp.	BSA	--	0.88 (K3)	a,c,d,e,f	same as above	Konar(1978), AMIC-448
Heptachlor	Naca sp.	BSA	--	0.04 (K6)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Notonecta sp.	BSA	--	0.886 (K2)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Ranatra filiformis	BSA	--	0.886 (K3)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Sphaerodema annulatus	BSA	--	0.887 (K3)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Hystus vittatus	BSA	--	0.5 (K1)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Nandus nandus	BSA	--	0.16 (K2)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Puntius sophore	BSA	--	0.1 (K1)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Trichogaster fasciatus (young)	BSA	--	0.04 (K1)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Trichogaster fasciatus (adult)	BSA	--	0.3 (K3)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Brachionus	BSA	--	0.1 (NTE)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Ceriodaphnia	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Closterium	BSA	--	0.881 (K)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Cyclops	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1978), AMIC-448
Heptachlor	Cypris	BSA	--	0.1 (K)	a,c,d,e,f	same as above	Konar (1978),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Heptachlor	Labeo rohita (early fingerling)	BSA	--	0.02 (K1)	a,c,d,e,f	same as above	Konar (1978),AMIC-648
Heptachlor	Labeo rohita (late fingerling)	BSA	--	0.28 (K2)	a,c,d,e,f	same as above	Konar (1978),AMIC-648
Hexachlorobenzene	Anguilla rostrata	FRL	St. John, N.B., Can.	0.01 (residue)	--	PCB"s were found in higher concentrations than organochlorine pesticides in all fish analyzed. The authors point out that PCB is less toxic in an acute sense than organochlorines, that little is known of sublethal PCB effects, and that more knowledge of PCB distribution and effects is needed.	Zitko (1971), AMIC-3715
Hexachlorobenzene	Esox niger	FRL	St. John, N.B., Can.	0.03 (residue)	--	same as above	Zitko(1971), AMIC-3715
Hexachlorobenzene	Salmo salar	FRL	St. John, N.B., Can.	0.002 (residue)	--	same as above	Zitko(1971), AMIC-3715
Hexachlorobenzene	Clupea harengus	FRL	St. John, N.B., Can.	0.003-0.006 (residue)	--	same as above	Zitko (1971), AMIC-3715
Hexachlorobenzene	Scomber scombrus	FRL	St. John, N.B., Can.	0.001 (residue)	--	same as above	Zitko (1971), AMIC-3715
Hexachlorodimethyl sulfone	Phormidium ambiguum	L	--	0.5-10.0 (MTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental	Otte(1978), AMIC-892

						management. No practical environmental means were found.	
Hexadecanol (Preparat Alfol WV 18)	Copepods	BSA	--	(NTE)	--	The formulation was applied to the water surface at concentration levels to yield a more or less continuous monomolecular layer. Gerris and other surface-oriented aquatic insects as well as insect larvae that surface to breathe and hatch could not maintain themselves at the surface and therefore sank and suffocated.	Mann (1971),AMIC-3879
Hexadecanol (Preparat Alfol WV 18)	Daphnia	BSA	--	(NTE)	--	same as above	Mann (1971),AMIC-3879
Hexadecanol (Preparat Alfol WV 18)	Tubificids	BSA	--	(NTE)	--	same as above	Mann (1971),AMIC-3879
Hexadecanol (Preparat Alfol WV 18)	Lebistes reticulatus	BSA	--	(NTE)	--	same as above	Mann(1971), AMIC-3879
Hexadecanol (Preparat Alfol WV 18)	Salmo gairdneri	BSA	--	(NTE)	--	same as above	Mann (1971),AMIC-3879
Hexadecanol (Preparat Alfol WV 18)	Gerris	BSA	--	(Suffocation)	--	same as above	Mann (1971),AMIC-3879
Nitivate Fly dip	Rasbora heteromorpha	RCFA and BSA	--	2.1 (T1)	aa,c,e,f, hard (HW) or soft (SW) synthetic water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969),AMIC-5425
Histamine phosphate	Negaprion brevirostris (1-3 kg)	BSA	--	48 (NTE 2 hr)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents.	Baldridge (1969), AMIC-3832

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	
Nobstone OSD	Crangon crangon	BSA	--	1.8-3.3 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Nac SC 1788	Crangon crangon	BSA	--	338-1088 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Nall-Chem 622	Steelhead trout (fingerlings)	BSA	--	3.2 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
Nall-Chem 622	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	0.1 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Noughtesolve	Crangon crangon	BSA	--	18-33 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater	Portmann, et al (1971), AMIC-7781

						organisms.	
Hydrochloric acid	Brook trout	L	--	pH 3.5 (SB4)	--	Excessive mucin accumulated in the gill region of exposed trout. No evidence of enhanced hemopoiesis or increased red cell destruction was found. The authors concluded that one of the reasons for trout deaths in acid water is that compensatory erythropoiesis does not occur or is not rapidly initiated.	Vaala, et al (1969), AMIC-5784
Hydrochloric acid	Brachycentrus americanus (larvae and nymphs)	BCFA	--	pH 1.21-1.8 (T4)	a,c,d,e	Aquatic insects generally were tolerant of acid conditions for at least one week. The organisms died at pH values below those normally found in streams. The authors point out that ecological factors in streams may cause different results. Research on long-term effects on molting, growth, reproduction, and survival was recommended.	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Ephemerella subvaria (larvae and nymphs)	BCFA	--	pH 4.35-5.05 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Hydropsyche betteni (larvae and nymphs)	BCFA	--	pH 3-3.35 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Taeniopteryx asura (larvae and nymphs)	BCFA	--	pH 3.87-3.48 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Boyeria vinosa (larvae and nymphs)	BCFA	--	pH 3.18-3.35 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Acroneuria lycorias (larvae and nymphs)	BCFA	--	pH 2.98-3.74 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Stenonema rubrum (larvae and nymphs)	BCFA	--	pH 3.15-3.41 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Ophiogomphus rupinsulensis	BCFA	--	pH 3.31-3.71 (T4)	a,c,d,e	same as above	Bell, et al (1969),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(larvae and nymphs)						AMIC-5988
Hydrochloric acid	Isogenus frontalis (larvae and nymphs)	BCFA	--	pH 3.28-4.84 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Pteronarcys dorsata (larvae and nymphs)	BCFA	--	pH 3.98-4.73 (T4)	a,c,d,e	same as above	Bell, et al (1969), AMIC-5988
Hydrochloric acid	Carcinus maenas	BSA	--	248 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Hydrochloric acid	Crangon crangon	BSA	--	268 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Hydrogen sulfide	Esox lucius (eggs)	BSCFA	--	0.038-0.832 (T4)	a,c,e	Laboratory studies were designed to test the effect of hydrogen sulfide on pike eggs and sac fry and the effect of oxygen concentrations on hydrogen sulfide toxicity. Eggs subjected to hydrogen sulfide produced a higher percentage of sac fry with anatomical malformations. Sac fry hatched from eggs held at the higher hydrogen sulfide concentrations were smaller than the controls. Sac fry subjected to hydrogen sulfide showed decreased growth rates at the higher concentrations. The level of dissolved oxygen was significant only in relation	Adelman, et al (1978), AMIC-5516

							to mortality of sac fry. Experiments with pike eggs indicate that hydrogen sulfide and oxygen acted independently in causing mortality.	
Hydrogen sulfide	Esox lucius (sac fry)	BSCFA	--		0.009-0.026 (T4)	a,c,e	same as above	Adelman, et al (1970), AMIC-5516
Hydrothol 191	Lepomis microlophus	FP	Tishomingo, Okla.		0.03-0.3 (SB14)	--	Of a number of organs inspected, the gills, liver, and testes of redear sunfish were apparently the most severely affected. Systemic blood dyscrasia was also noted at 0.5 ppm Hydrothol in histopathological sections.	Eller (1969), AMIC-5459
Hydrothol 191	Gammarus fasciatus	BSA	--		0.48 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978), AMIC-493
Hydroxyacetic acid (glycolic acid)	Phormidium ambiguum	L	--		0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Cooper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1979), AMIC-892
H2SiF6 (as FLUORIDE)	Gammarus pseudo-limnaeus	BCF	--		0.08-0.13 (NTE)	a*,c,d,e,f ,r*,s	Chloramine toxicity was very carefully studied using weight reduction and reproduction over 15 to 21 week exposure periods. Loss of weight and ability to reproduce were observed at concentrations less than that observed for toxicity. The lowest chloramine concentration having no significant effect was less than 3.4 ppb for Gammarus and 8.817 ppb for the fathead minnow.	Arthur, et al (1971), AMIC-3290

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
H2SiF6 (as FLUORIDE)	Pimephales promelas	BCF	--	8.8-8.13 (NT)	a*,c,d,e,f,r*,s	same as above	Arthur et al (1971), AMIC-3298
IAA	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
Ioline brushweed killer	Salmo gairdneri	BCFA and BSA	--	27 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Ioline grass growth regulator (Regulox)	Salmo gairdneri	BCFA and BSA	--	56 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Ioline vergicide weedkiller 0	Salmo gairdneri	BCFA and BSA	--	3.3 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425

	Iodoacetic acid	Phaeidium ambiguum	L	—	9.5-10.0 (100 percent growth inhibited 14)	—	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
	Ioxynil Na	Rasbora heteromorpha	BCFA and BSA	—	68 (TZ, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
	Ioxynil Na	Rasbora heteromorpha	BCFA and BSA	—	3.3 (TZ, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
	IPC	Gammarus fasciatus	BSA	—	19.8 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by	Sanders (1978), AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						the TL sub 50 values. All of the animals represent important food chain links.	
Iron	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	44 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus	FW	Catalina Island, Cal.	37 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	46 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5989
Iron	Paralabrax clathratus	FW	Catalina Island, Cal.	43 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5990
Iron	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	83 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus	FW	Catalina Island, Cal.	122 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus (gravid	FW	Catalina Island, Cal.	118 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988

	females)						
Iron	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	168 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus	FH	Catalina Island, Cal.	285 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	72 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus	FH	Catalina Island, Cal.	72 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	488 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus	FH	Catalina Island, Cal.	648 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	128 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Iron	Paralabrax clathratus	FH	Catalina Island, Cal.	165 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Iso-propyl 2,4,dinitro-6-sec-butylphenyl carbonate	Hashora heteromorpha	BCFA and BSA	--	0.024 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater forsome species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
I.C.I. Summer sheep dip	Rasbora heteromorpha	ACFA and BSA	--	4.1 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969), AMIC-5425
Jansolv-68	Pimephales promelas	BSA	--	approx. 56.8 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are given as "most probable" 96-hr TL sub m.	Zillich (1969), AMIC-2989
Jansolv-68	Pimephales promelas	BSA	--	approx. 7.5 (MSC)	c,d,e,f	same as above	Zillich (1969), AMIC-2989
Jansolv-68	Biochemical oxygen demand	L	--	350,000	c,d,e,f	same as above	Zillich (1969), AMIC-2989
Jan-Solv-68	Steelhead trout (fingerlings)	BSA	--	35.5 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
Jan-Solv-68	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	0.8 (X)	--	same as above	Tracy, et al (1969), AMIC-3834
Juglone	Salmo gairdneri	BSA	--	0.8382 (T4)	c	Bioassays were conducted at 12 C. The toxicity of Juglone to rainbow trout and bluegills was not altered	Marking (1970), AMIC-5517

							significantly in waters of different temperature or hardness. Standard (pH 7.4) and buffered (pH 9.8) solutions of Juglone aged for one week effectively killed rainbow trout although approximately three times as much Juglone was required at the higher pH. Juglone is easily reduced to less toxic components by factors in the natural environment. However, Juglone is sufficiently persistent to eliminate target fish.	
	Juglone	Esox lucius	BSA	--	0.0271 (T4)	c	same as above	Marking (1970), AMIC-5517
	Juglone	Carassius auratus	BSA	--	0.080 (T4)	c	same as above	Marking (1970), AMIC-5517
	Juglone	Cyprinus carpio	BSA	--	0.088 (T4)	c	same as above	Marking (1970), AMIC-5517
	Juglone	Catostomus commersoni	BSA	--	0.068 (T4)	c	same as above	Marking (1970), AMIC-5517
	Juglone	Ictalurus melas	BSA	--	0.0757 (T4)	c	same as above	Marking (1970), AMIC-5517
	Juglone	Ictalurus punctatus	BSA	--	0.0367 (T4)	c	same as above	Marking (1970), AMIC-5517
	Juglone	Lepomis cyanellus	BSA	--	0.0469 (T4)	c	same as above	Marking (1970), AMIC-5517
	Juglone	Lepomis macrochirus	BSA	--	0.0429 (T4)	c	same as above	Marking (1970), AMIC-5517
	Karaex	Roccus saxatilis (fingerlings)	RSA	--	3.0 (T4)	a*,c,d,e,f ,p and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
	Kelthane	Tubifex tubifex	FL and	Belzoni, Miss.	0.58 (NTE)	--	The response of pesticide-resistant aquatic organisms to	Waqvi, et al (1969).

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
		BSA				various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	AMIC-5979
Ketoendrin	Anacystis nidulans	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SN	Metabolic products of Aldrin, Dieldrin, and Endrin can be as toxic as the parent compounds, as shown by OD measurement.	Batterton, et al (1971), AMIC-1471
Ketoendrin	Agmenellum quadruplicatum	L	--	NTE	a*,c*,r SN	same as above	Batterton, et al(1971), AMIC-1471
Kiefos	Puntius ticto	--	--	0.88017 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Kiefos followed in decreasing order by Sumithion, Malathion, Fenitrothion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	Bhatia (1971),AMIC-5423
LAS	Pimephales promelas	ECFA	--	3.5 (T4)	a*,e	LAS acted synergistically with parathion to cause less survival of fatheds but had an indeterminate effect with DDT and no synergistic effect with Endrin.	Solon, et al (1969), AMIC-3785
Lauryl ether sulfate (plus ethylene oxide)	Cardium edule	BSA	--	24 (T2)	as(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater	Portmann, et al (1971),AMIC-7781

						organisms.	
Lauryl ether sulfate (plus ethylene oxide)	Crangon crangon	BSA	--	greater than100 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann,et al (1971). AMIC-7781
Lauryl ether sulfate (plus ethylene oxide)	Carcinus maenas	BSA	--	greater than100 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann,et al (1971). AMIC-7781
Lauryl ether sulfate (plus ethylene oxide)	Pandalus montaqui	BSA	--	greater than100 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann,et al (1971). AMIC-7781
Lead arsenate	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas(1971) AMIC-1856
Lead carbonate	Carassius auratus	L	--	118 (T7)	s,c	In addition to toxicity data, conditioned avoidance response was studied at subletha1 concentrations. The lowest concentration of metal resulting in significant impairment was arsenic, 0.18% lead, 0.07% mercury, 0.003% and selenium, 0.25. Deleterious effects occurred at metal concentrations approximately similar to potable water standards.	Weir, et al (1970). AMIC-739
Lead nitrate (as lead)	Cardium edule	BSA	--	greater than 500 (T2)	as(continuous aeration, seawater, and daily solution	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most	Portmann, et al (1971). AMIC-7781

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					renewal)	published data of this type deal with toxicity of chemicals to freshwater organisms.	
Lead nitrate (as lead)	Pandalus montagui	BSA	--	375 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Lead nitrate	Carassius auratus	L	--	6.6 (T7)	a,c	In addition to toxicity data, conditioned avoidance response was studied at sublethal concentrations. The lowest concentration of metal resulting in significant impairment was arsenic, 0.18; lead, 0.87; mercury, 0.883; and selenium, 0.25. Deleterious effects occurred at metal concentrations approximately similar to potable water standards.	Weir, et al (1978), AMIC-739
Lead sulfate (as Pb)	Acroneuria	BSA	--	64 (T14)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Lead sulfate (as Pb)	Ephemerella	BSA	--	16 (T7)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Lead sulfate (as Pb)	Hydropsyche	BSA	--	32 (T7)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Lead	Coregonus clupeaformis	FL	Moose Lake, Can.	0.5 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both	Uthe, et al (1971), AMIC-3819

						areas.	
Lead	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.5 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Lead	Esox lucius	FL	Moose Lake, Can.	0.5 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Lead	Esox lucius	FL	Lake St. Pierre, Can.	0.5 (residue)	--	same as above	Uthe, et AL (1971), AMIC-3819
Lead	Esox lucius	FL	Lake Erie, Can.	0.5 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Lead	Osmerus mordax	FL	Lake Erie, Can.	0.5 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Lead	Perca flavescens	FL	Lake Erie, Can.	0.5 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.1 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	1.3 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1.1 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	1.3 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.3 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	2.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	1.3 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	8.7 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	1.5 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	1.6 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus	FM	Scatte-good Steam Plant, Los Angeles, Cal.	1.3 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Lead	Paralabrax clathratus	FM	Catalina Island, Cal.	8.9 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988

Lead	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	2.2 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5468
Lead	Paralabrax clathratus	FW	Catalina Island, Cal.	3.4 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5468
Lindane (gamma BHC)	Fish (not specified)	--	--	greater than 0.01-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971 AMIC-1856
Lindane	Lepomis cyanellus (Resistant)	BSA	--	1.93 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant fish were compared to susceptible ones collected at Starkville.	Minchew, et al(1970), AMIC-5471
Lindane	Lepomis cyanellus (Susceptible)	BSA	--	0.05 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Lindane	Notemigonus crysoleucas (Resistant)	BSA	--	3.14 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Lindane	Notemigonus crysoleucas (Susceptible)	BSA	--	0.15 (T2)	a*	same as above	Minchew, et al(1970), AMIC-5471
Lindane	Ictalurus punctatus	BSA	--	0.044 (T4)	a. synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or	Macek, et al(1970), AMIC-5510

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	
Lindane	Ictalurus melas	BSA	--	0.864 (T4)	a; synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Lindane	Carassius auratus	BSA	--	0.131 (T4)	a; synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Lindane	Cyprinus carpio	BSA	--	0.098 (T4)	a; synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Lindane	Pimephales promelas	BSA	--	0.887 (T4)	a; synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Lindane	Lepomis macrochirus	BSA	--	0.868 (T4)	a; synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Lindane	Lepomis microlophus	BSA	--	0.883 (T4)	a; synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Lindane	Micropterus salmoides	BSA	--	0.832 (T4)	a; synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Lindane	Salmo gairdneri	BSA	--	0.827 (T4)	a; synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Lindane	Salmo trutta	BSA	--	0.882 (T4)	a; synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Lindane	Oncorhynchus kisutch	BSA	--	0.841 (T4)	a; synthetic test water	same as above	Macek, et al (1970), AMIC-5518

Lindane	Perca flavescens	BSA	--	0.868 (T4)	a; synthetic test water	same as above	Macek, et al (1978), AMIC-5518
Lindane	Palaemonetes kadiakensis (resistant)	BSA	--	0.014-0.0373 (T1)	a°	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 2½ times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; least toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1978), AMIC-5519
Lindane	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0051 (T1)	a°	same as above	Naqvi, et al (1978), AMIC-5519
Lindane	Morone saxatilis (fingerlings)	BSA	--	0.4 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Cesaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Mayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Lindane	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.68 (K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Lindane	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Reizoni, Miss	0.60 (87 percent KZ)	--	same as above	Naqvi, et al (1969), AMIC-5979
Lindane	Tubifex tubifex	FL and BSA	Reizoni, Miss.	4.8 (NTE)	--	same as above	Naqvi, et al(1969), AMIC-5979
Lindane	Mercenaria mercenaria (eggs)	L	--	greater than 10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al(1969), AMIC-5999
Lindane	Mercenaria mercenaria (larvae)	L	--	greater than 10.0 (T12)	--	same as above	Davis, et al(1969), AMIC-5999
Lindane	Crassostrea virginica (eggs)	L	--	9.1 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
Lindane	Gambusia affinis (female, 4.3	BSA	--	0.13 (T4)	a,c,d, e,f,i, (Honolulu	The five fish species are commonly found in streams and estuaries in semi-tropical areas. G. affinis was	Nunogawa, et al (1970), AMIC-6567

	cm, 1.9 g)			tap water)	the most tolerant. Varied sensitivity to the toxicants were found. K. sandvicensis was the most sensitive fish studied. The standard method procedure was followed.		
Lindane	Lebistes reticulatus (male, 1.8 cm, 0.2 g)	BSA	--	0.85 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
Lindane	Tilapia mossambica (3.4 cm, 1.3 G)	BSA	--	0.06 (T4)	a,c,d,e,f,i (Honolulu tap water)	same as above	Nunogawa, et al (1970), AMIC-6567
Lindane	Kuhlia sandvicensis (4.3 cm, 1.5 G)	BSA	--	0.04 (T4)	a,c,d,e,f,i, salt water	same as above	Nunogawa, et al (1970), AMIC-6567
Lindane	Stolephorus purpurea (3.6 cm, 0.4 G)	BSA	--	0.004 (T 12 hr)	a,c,d,e,f,i, salt water	same as above	Nunogawa, et al (1970), AMIC-6567
Linear alkylate sulfonate	Pimephales promelas	BCFA	--	4.2-4.5 (T4)	a*,c,d,f*, i,j,n, calcium, magnesium, sodium, potassium, sulfate, beryllium, strontium, iron, boron, barium, aluminum, zinc, copper, cadmium	Acute and chronic toxicity studies resulted in a laboratory fish production index for fathead minnow. Lethality of LAS to newly hatched fry was the most critical factor with no effect at 0.4 ppm on spawning egg production, or hatchability at this concentration. A fungus infection of mature males occurred and was controlled by means of antibiotics. No accumulative mortality occurred. The application factor was calculated to be between 14 and 28 percent. The concentration of 0.63 ppm was determined to be the maximum acceptable concentration of LAS for fatheads.	Pickering, et al (1978), AMIC-65
Linear alkylate sulfonate	Pimephales promelas	BCFCH	--	0.63 (MTE)	a*,c,d,f*, i,j,n, calcium, magnesium, sodium, potassium, sulfate, beryllium, strontium, iron, boron, barium, aluminum, zinc,	same as above	Pickering, et al (1978), AMIC-65

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					copper, cadmium		
Linuron	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1856
Lirestanol	Rasbora heteromorpha	BCFA and BSA	--	0.844 (T2)	s°,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-9425
Lissapol IPA	Crangon crangon	BSA	--	1000-3300 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Lissapol NN	Crangon crangon	BSA	--	330-1000 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Lissapol NX	Rasbora heteromorpha	BCFA and BSA	--	3.6 (T2)	s°,c,e,f, hard (HW) or SOFT(SW) synthetic	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude.. Knowing the toxicity and	Alabaster (1969), AMIC-9425

					dilution water, or seawater for some species	percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Lissapel NX	Crangon crangon	BSA	—	1000-3300 (TZ)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Lithium	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	6.9 (dorsal muscle residue)	—	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FH	Catalina Island, Cal.	6.2 (dorsal muscle residue)	—	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	6.7 (ventral muscle residue)	—	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FH	Catalina Island, Cal.	5.6 (ventral muscle RESIDUE)	—	same as above	Stapleton (1968), AMIC-5980
Lithium	Paralabrax clathratus	FH	Scattergood Steam Plant,	8.6 (gonads residue)	—	same as above	Stapleton (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Los Angeles, Cal.				AMIC-5988
Lithium	Paralabrax clathratus	FN	Catalina Island, Cal.	8.4 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Lithium	Paralabrax clathratus (gravid females)	FN	Catalina Island, Cal.	7.7 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Lithium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	5.8 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Lithium	Paralabrax clathratus	FN	Catalina Island, Cal.	7.3 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Lithium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	6.8 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Lithium	Paralabrax clathratus	FN	Catalina Island, Cal.	7.7 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Lithium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	7.6 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Lithium	Paralabrax clathratus	FN	Catalina Island, Cal.	8.5 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Lithium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	588 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Lithium	Paralabrax clathratus	FN	Catalina Island, Cal.	124 (eyeball residue)	--	same as above	Stapleton (1968),

							AMIC-5960
	Lubrol APH9	Cardium edule	BSA	--	18-33 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
	Lubrol APH9	Crangon crangon	BSA	--	33-188 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
A-201	Lubrol L	Rasbora heteromorpha	BCFA and BSA	--	16 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
	Lubrol L	Rasbora heteromorpha	BCFA and BSA	--	12.5 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
	Magic Power	Pimephales promelas	BSA	--	14.8 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are	Zitlich (1969), AMIC 7989

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						given as "most probable" 96-hr TL sub m.	
Magic Power	Pimephales promelas	BSA	--	2.7 (MSC)	c,d,e,f	same as above	Zillich (1969), AMIC-2909
Magic Power	Biochemical oxygen demand	L	--	880,880	c,d,e,f	same as above	Zillich (1969), AMIC-2909
Magnesium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1670 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FM	Catalina Island, Cal.	2190(dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1820 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FM	Catalina Island, Cal.	2190(ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	1810 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988

Magnesium	Paralabrax clathratus	FW	Catalina Island, Cal.	2420 (gonads residue)	--	same as above		Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus (gravid females)	FW	Catalina Island, Cal.	1420 (gonads residue)	--	same as above		Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	690 (liver residue)	--	same as above		Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FW	Catalina Island, Cal.	1848 (liver residue)	--	same as above		Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	738 (integument residue)	--	same as above		Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FW	Catalina Island, Cal.	848 (integument residue)	--	same as above		Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	1288 (heart residue)	--	same as above		Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FW	Catalina Island, Cal.	958 (heart residue)	--	same as above		Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	1888 (eyeball residue)	--	same as above		Stapleton (1968), AMIC-5988
Magnesium	Paralabrax clathratus	FW	Catalina Island, Cal.	1478 (eyeball residue)	--	same as above		Stapleton (1968), AMIC-5988
Malachite green	Rasbora heteromorpha	BCFA and BSA	--	8.46 (T1, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water,	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy		Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					or seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Malachite green	Rasbora heteromorpha	BCFA and BSA	--	0.88 (T1, softwater)	a*,c,e,f,hard (HW) or soft (SW) synthetic dilution water, orseawater for some species	same as above	Alabaster (1969),AMIC-5425
Malachite green	Salmo gairdneri	BCFA and BSA	--	0.89 (T2, hardwater)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Malachite green	Rasbora heteromorpha	BCFA and BSA	--	0.17 (T1, hardwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Malachite green	Rasbora heteromorpha	BCFA and BSA	--	0.14 (T1, softwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution	same as above	Alabaster (1969),AMIC-5425

					water, or seawater for some species		
	Malachite green	Morone saxatilis (fingerlings)	BSA	--	0.3 (T1)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Cesaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-9671
	Malathion	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971), AMIC-1856
A-295	Malathion	Lepomis macrochirus	BCFCH	--	0.028 (K54)	a,c,d,e,f, conductivity	Bluegills were exposed to seven concentrations of Malathion from 0.00125 to 0.08 ppm. Fish spawned under the test conditions and the effects were noted in all life stages. Reproduction and early fry survival were unaffected by the 0.0074 ppm concentration that crippled adult fish over several months. A "maximum acceptable toxicant concentration" was calculated.	Eaton (1970), AMIC-1312
	Malathion	Lepomis macrochirus	BCFCH	--	0.066 (K16)	a,c,d,e,f, conductivity	same as above	Eaton (1970), AMIC-1312
	Malathion	Lepomis macrochirus	BCFCH	--	0.089-0.131 (T4)	a,c,d,e,f, conductivity	same as above	Eaton (1970), AMIC-1312
	Malathion	Salvelinus fontinalis (1.19 g)	BCFA	--	138.8 (T4)	aa,a,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	Four insecticides were evaluated on four fish species at two body weights. Standard method bioassay procedures were followed. Symptomology was also reported. Generally, toxicity was significantly different at the two body weights, i.e., more toxic at the lower body weight, except for Malathion. Well-defined experimental conditions were said to result in truer measurement of	Post, et al (1971), AMIC-1812

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						toxicity.	
Malathion	Salvelinus fontinalis (2.13 g)	BCFA	--	128.8 (T4)	ap,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et AL(1971), AMIC-1812
Malathion	Salmo clarki (0.33 g)	BCFA	--	8.15 (T4)	ap,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Malathion	Salmo clarki (1.25 g)	BCFA	--	8.28 (T4)	ap,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Malathion	Salmo gairdneri (8.41 g)	BCFA	--	8.12 (T4)	ap,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Malathion	Oncorhynchus kisutch (1.78 g)	BCFA	--	8.265 (T4)	ap,c,d, e,f,i,o, sulfate, copper, manganese, iron, and chromium	same as above	Post, et al (1971), AMIC-1812
Malathion	Cyprinus carpio	L	--	8.818 (S8)	--	This study was conducted to determine whether components of tissues from various fish would interfere with GLC determinations for Malathion. Good	Reeab(1968), AMIC-3728

							recovery (88-96 percent) was obtained with best recovery from skin, flesh, and gills. Recovery was less successful in liver, brain, and blood. The author recommends the GLC procedure as simpler than the use of activated charcoal.	
Malathion	Catostomus commersoni	L	--	0.018 (SB)	--		same as above	Reeb (1968), AMIC-3728
Malathion	Perca flavescens	L	--	0.018 (SB)	--		same as above	Reeb (1968), AMIC-3728
Malathion	Esox niger	L	--	0.018 (SB)	--		same as above	Reeb (1968), AMIC-3728
Malathion	Notemigonus crysoleucas	L	--	0.018 (SB)	--		same as above	Reeb (1968), AMIC-3728
Malathion	Pimephales promelas	BSA	--	16.0 (T4)	aa,d,e,o, and Fe		Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969), AMIC-3787
Malathion	Pimephales promelas	BCFA	--	11.0 (T14)	a*,d,e,o, and Fe		same as above	Bender (1969), AMIC-3787
Malathion	Puntius ticto	--	--	0.0874 (T4)	a,c,d,e,f		Of the pesticides investigated, the most toxic was Klefos followed in decreasing order by Sumithion, Malathion, Formithion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	Bhatia (1971), AMIC-5423
Malathion	Rasbora heteromorpha	BCFA and BSA	--	8 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or		One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Malathion	Ictalurus punctatus	BSA	--	8.97 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organochosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	Macek,et al (1970), AMIC-5518
Malathion	Ictalurus melas	BSA	--	12.98 (T4)	a, synthetic testwater	same as above	Macek, et al(1970), AMIC-5518
Malathion	Carassius auratus	BSA	--	10.78 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5518
Malathion	Cyprinus carpio	BSA	--	6.59 (T4)	a, synthetic test water	same as above	Macek, et al(1970), AMIC-5518
Malathion	Pimephales promelas	BSA	--	8.65 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5518
Malathion	Lepomis macrochirus	BSA	--	8.183 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5518
Malathion	Lepomis microlophus	BSA	--	8.178 (T4)	a, synthetic	same as above	Macek,et al (1970),

					test water		AMIC-5519
Malathion	Micropterus salmoides	BSA	--	0.285 (T4)	a, synthetic test water	same as above	Macek,et al (1978), AMIC-5518
Malathion	Salmo gairdneri	BSA	--	0.178 (T4)	a, synthetic test water	same as above	Macek, etal (1978), AMIC-5518
Malathion	Salmo trutta	BSA	--	0.208 (T4)	a, synthetic test water	same as above	Macek, et al(1978), AMIC-5518
Malathion	Oncorhynchus kisutch	BSA	--	0.101 (T4)	a, synthetic test water	same as above	Macek,et al (1978), AMIC-5518
Malathion	Perca flavescens	BSA	--	0.263 (T4)	a, synthetic test water	same as above	Macek, etal (1978), AMIC-5518
Malathion	Morone saxatilis (fingerlings)	BSA	--	0.24 (T4)	a,c,d,e,f, g	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Rayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Malathion	Cyprinus carpio	L	--	5 (SB4)	--	Malathion residues in carp occurred primarily in the liver and flesh with lesser amounts in the brain, blood, and gills. Retention time was relatively brief with most of the residue passing on or being metabolized within 1-2 days. Metabolism in the fish foregut, degradation biochemically, and lack of uptake due to low permeability were cited as possible explanations for the results obtained. Lack of persistence in fish coupled with slow hydrolysis in the environment seem to indicate that this compound has desirable characteristics regarding safety to humans.	Bender(1969), AMIC-5731
Malathion	Cyprinus carpio	L	--	2.6-66.6 (residue)	--	same as above	Bender(1969), AMIC-5731
Malathion	Copepods	FL	State	0.025 (K2)	--	The response of	Naqvi, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	and BSA	College, Miss.			pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	(1969), AMIC-5979
Malathion	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.025 (13 percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979
Malathion	Tubifex tubifex	FL and BSA	Belzoni, Miss.	3.0 (MTE)	--	same as above	Naqvi, et al(1969), AMIC-5979
Malathion	Crassostrea virginica (eggs)	L	--	9.87 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on	Davis, et al (1969), AMIC-5998

						shellfish.	
Malathion	Crassostrea virginica (larvae)	L	--	2.66 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
Malathion	Cardium edule	BSA	--	3.3-18 (T2)	as(continuous, aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Malathion	Crangon crangon	BSA	--	0.33-1.0 (T2)	as(continuous, aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Malathion	Wolffia papulifera	L	--	100 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
Maleic acid	Pimephales promelas	BSA	--	5.8 (T4)	s*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender (1969), AMIC-3787
Manazon	Fish (not specified)	--	--	greater than 100-1000 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971) AMIC-1056
Mancozeb	Fish (not specified)	--	--	greater than 1.0-10.0 (K)	--	same as above	Hawdesley-Thomas (1971), AMIC-1056
Maneb	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971), AMIC-1056
Maneb	Agonus	BSA	--	0.33-1.0 (T2)	s*	One hundred-forty surface active	Portmann, et

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	catasphractus				(continuous, aeration, sea water, and daily solution renewal)	agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	al (1971), AMIC-7781
Maneb	Asterias rubens	BSA	--	33-100 (T2)	as(continuous, aeration, sea water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Maneb	Cardium edule	BSA	--	100-330 (T2)	as(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1974), AMIC-7781
Maneb	Crangon crangon	BSA	--	3.3-10 (T2)	as(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Manganese	Coregonus clupeaformis	FL	Moose Lake, Can.	0.7 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et AL(1971), AMIC-3819
Manganese	Coregonus	FL	Lake	0.7 (residue)	--	same as above	Uthe, etal

		clupeaformis		Ontario, Can.				(1971), AMIC-3819
	Manganese	Esox lucius	FL	Moose Lake, Can.	3.8 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
	Manganese	Esox lucius	FL	Lake St. Pierre, Can.	3.2 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
	Manganese	Esox lucius	FL	Lake Erie, Can.	0.9 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
	Manganese	Osmerus mordax	FL	Lake Erie, Can.	0.82 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
	Manganese	Perca flavescens	FL	Lake Erie, Can.	0.21 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
A-303	Manganese	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.5 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
	Manganese	Paralabrax clathratus	FM	Catalina Island, Cal.	0.6 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
	Manganese	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.5 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
	Manganese	Paralabrax clathratus	FM	Catalina Island, Cal.	0.5 (ventral muscle	--	same as above	Stapleton (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
				residue)			AMIC-5948
Manganese	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	1.1 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Manganese	Paralabrax clathratus	FN	Catalina Island, Cal.	1.7 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Manganese	Paralabrax clathratus (gravid females)	FN	Catalina Island, Cal.	2.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Manganese	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	2.4 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Manganese	Paralabrax clathratus	FN	Catalina Island, Cal.	4.2 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Manganese	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	8.7 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Manganese	Paralabrax clathratus	FN	Catalina Island, Cal.	8.8 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Manganese	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	1.6 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Manganese	Paralabrax clathratus	FN	Catalina Island, Cal.	1.4 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Manganese	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles,	1.6 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988

Manganese	Paralabrax clathratus	FM	Cal. Catalina Island, Cal.	2.6 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Monoxol	Rasbora heteromorpha	BCFA and BSA	--	16 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
MCPA	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971), AMIC-1856
MCPA	Crassostrea virginica (eggs)	L	--	15.6 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
MCPA	Crassostrea virginica (larvae)	L	--	31.3 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Mecarbam	Fish (not specified)	--	--	greater than 0.001-0.01 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971) AMIC-1856

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Menazon	Rashora heteromorpha	BCFA and BSA	--	154 (T2)	aa,a,a,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Mercuric chloride (as Hg)	Acroneuria	BSA	--	2 (T4)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Mercuric chloride (as Hg)	Ephemerella	BSA	--	2 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Mercuric chloride (as Hg)	Hydropsyche	BSA	--	2 (T4)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Mercuric chloride (as Hg)	Watersiopora cucullata (larvae)	L	--	0.18 (T 2hr)	a,c,i, and salinity	This study was conducted to determine species of marine larvae suitable for use in test screening antifouling chemicals. A. salina (brine shrimp) appeared to have the best potential for this purpose. A. salina larvae sensitivity was greatest starting at age 28-48 hr, and tolerated relatively low pH (5.8).	Wisely, et al (1967), AMIC-5788
Mercuric chloride (as Hg)	Bugula neritina (larvae)	L	--	0.28 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5788
Mercuric chloride (as Hg)	Spirorbis tenellosa (larvae)	L	--	0.14 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5788
Mercuric chloride (as Hg)	Galeolaria caespitosa	L	--	0.12 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967),

	(larvae)						AMIC-6788
Mercuric chloride (as Hg)	Mytilus edulis planulatus (larvae)	L	—	13.1 (T 2 hr)	s,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-6789
Mercuric chloride (as Hg)	Crassostrea commercialis (larvae)	L	—	188.9 (T 2 hr)	s,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-6788
Mercuric chloride (as Hg)	Artemia salina (larvae)	L	—	1889 (T 2 hr)	s,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-6789
Mercuric chloride (as mercury)	Carcinus maenas	BSA	—	1.2 (T2)	ae(continuous, aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Mercuric chloride (as mercury)	Cardium edule	BSA	—	9.8 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Mercuric chloride (as mercury)	Crangon crangon	BSA	—	9.16-8.33(T4)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Mercuric chloride (as mercury)	Ostrea edulis	BSA	—	4.2 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Mercuric chloride	Pandalus	BSA	—	8.88 (T2)	ae	same as above	Portmann, et

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
(as mercury)	montaqui				(continuous aeration, seawater, and daily solution renewal)		al (1971), AMIC-7701
Mercuric chloride (as mercury)	Platichthys flesus	BSA	--	3.3 (T2)	s* (continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Mercuric chloride	Carassius auratus	BSA	--	0.25 (SB1)	s*,e	Mercury accumulated rapidly in goldfish. The higher the concentration up to 1.0 ppm, the more rapid was the accumulation. At higher concentrations, heavy mucus formation occurred with most of the mercury being found in the mucus. The authors noted that bacterial methylation occurs in dead fish but only if mucous is present.	McKone, et al (1971), AMIC-1492
Mercuric chloride	Carassius auratus	BSA	--	0.25 (15 ppm tissue residue 1 d)	s*,e	same as above	McKone, et al (1971), AMIC-1492
Mercuric chloride	Carassius auratus	BSA	--	0.25 (40-50 ppm tissue residue 100 hr)	s*,e	same as above	McKone, et al (1971), AMIC-1492
Mercuric chloride	Ambassis safgha	BSA	--	2.8 (T1)	s*, seawater	Measurement of residual dissolved oxygen during exposure of fish to toxicants resulted in data similar to that obtained from 24- and 48-hr bioassays by the standard method. The residual oxygen method required only 8 hr to conduct. Variables studied included density per unit volume, temperature, and fish size. The authors conclude that the residual oxygen method is a quick and reliable procedure for routine monitoring work.	Ballard, et al (1969), AMIC-388

Mercuric chloride	Carassius auratus	L	--	0.82 (T7)	s,c	In addition to toxicity data, conditioned avoidance response was studied at sublethal concentrations. The lowest concentration of metal resulting in significant impairment was: arsenic, 0.18% lead, 0.87% mercury, 0.883% and selenium, 0.2%. Deleterious effects occurred at metal concentrations approximately similar to potable water standards.	Weir, et al (1979), AMIC-739
Mercury (total)	Salvelinus namaycush (1 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.24(residue)	--	Lake trout stocked annually as tagged fingerlings were netted and analyzed for mercury and methylmercury. Total mercury and the proportion of methylmercury to mercury increased with age but not sex.	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (11 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.58 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (12 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.57 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (2 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.27 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (3 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.37 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (4 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.43 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (5 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.43 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (6 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.50 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (7 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.43 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury (total)	Salvelinus	FL	Cayuga Lake,	0.55 (residue)	--	same as above	Bache, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	nanaycush (8 yr)		Ithaca, N.Y.				(1971), AMIC-3818
Mercury (total)	Salvelinus namaycush (9 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.53 (residue)	--	same as above	Bache, et al (1971), AMIC-3818
Mercury	Coregonus clupeaformis	FL	Moose Lake, Can.	0.87 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, etal (1971), AMIC-3819
Mercury	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.17 (residue)	--	same as above	Uthe, etal (1971), AMIC-3819
Mercury	Esox lucius	FL	Moose Lake, Can.	0.11 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Mercury	Esox lucius	FL	Lake St. Pierre, Can.	0.78 (residue)	--	same as above	Uthe, et AL (1971), AMIC-3819
Mercury	Esox lucius	FL	Lake Erie, Can.	0.49 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Mercury	Osmerus mordax	FL	Lake Erie, Can.	0.85 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Mercury	Perca flavescens	FL	Lake Erie, Can.	0.22 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Metasystox	Rasbora heteromorpha	BCFA and BSA	--	6.5 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a	Alabaster (1969), AMIC-5425

						water, or seawater for some species	formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
	Methanol	Agonus cataphractus	BSA	--	10,000-33,000 (T2)	as(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
	Methanol	Cardium edule	BSA	--	3300-10,000 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Methanol	Crangon crangon	BSA	--	1700 (T4)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-701
	Methoxychlor (tritium labelled)	Sorghum halbense	L (model ecosystem)	--	1 lb per A (NTE)	s.c.q. standard reference water and sand	This small laboratory model ecosystem procedure was developed to study pesticide biodegradability and ecological magnification. The food-chain pathways in this system were: (1) sorghum - caterpillar (larva), (2) caterpillar (excreta) - Oedogonium, (3) Oedogonium - snail, (4) Estigmene (excreta) - diatoms, (5) Diatoms - plankton, (6) Plankton - Culex (larvae), (7) Culex - Gambusia. The fish is the top of the food chain. Using isotopically labeled pesticides (1 lb/acre application rate), residues were determined for only selected organisms (snail, mosquito, and fish) and water.	Metcalf, et al (1971), AMIC-1495

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Reproducibility appeared to be good. The authors state that the method gives a good estimation of the potential toxicity of pesticides and their breakdown products to a variety of organisms and is suitable for computer modeling.	
Methoxychlor (tritium labelled)	Estigmene acrea	L (Model ecosystem)	--	1 lb per A (K-NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
Methoxychlor (tritium labelled)	Physa spp	L (Model ecosystem)	--	15.7 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
Methoxychlor (tritium labelled)	Daphnia magna	L (Model ecosystem)	--	1 lb per A (K-NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
Methoxychlor (tritium labelled)	Culex pipiens quinquefasciatus	L (model ecosystem)	--	0.48(residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
Methoxychlor (tritium labelled)	Oedogonium cardiacum	L (model ecosystem)	--	1 lb per A(NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), ANIC-1495
Methoxychlor (tritium labelled)	Gambusia affinis	L (model ecosy	--	0.33 (residue)	a,c,g, standard reference water and	same as above	Metcalf, et al (1971), ANIC-1495

		stem)			sand		
Methoxychlor (tritium labelled)	Diatoms (Navicula, Cosainodiscus, Diploneas, and Diatomella)	L (model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, et al(1971), AMIC-1495
Methoxychlor (tritium labelled)	Protozoa (Nuclearia, Colepa, Vorticella, and Paramecium)	L (model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, etal (1971), AMIC-1495
Methoxychlor (tritium labelled)	Rotifers (Asplanchnopus, Notomatta, Euclaris, Scardium)	L(model ecosystem)	--	1 lb per A (NTE)	a,c,g, standard reference water and sand	same as above	Metcalf, etal (1971), AMIC-1495
Methoxychlor (tritium labelled)	Water	L (model ecosystem)	--	0.0016 (residue)	a,c,g, standard reference water and sand	same as above	Metcalf, et al (1971), AMIC-1495
Methoxychlor	Chironomus tentans (instar)	BSACF	--	5.5 (T4)	c,d,e	This chemical was evaluated primarily because it is one of the principal substitutes for DDT. Rapid breakdown of the chemical occurred when living organisms were present. The half-life of methoxychlor was 7 days in Ann Arbor city water, but was much more rapid (less than 1 day) in local creek water and slow (approximately 200 days) in distilled water. These studies were to be continued to determine long term effects but no data are presented.	Bender,et al (1971), AMIC-3279
Methoxychlor	Stenonema candidum (instar)	BSACF	--	2.1 (T4)	c,d,e	same as above	Bender, et al(1971), AMIC-3279
Methoxychlor	Taeniopteryx nivalis (instar)	BSACF	--	0.98 (T4)	c,d,e	same as above	Bender,et al (1971), AMIC-3279
Methylene bis	Phemidium	L	--	8.5-10.0 (16	--	Of 74 chemicals evaluated as	Otto (1978),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
thiocyanate	ambiguum			percent growth inhibited 14)		algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	AMIC-692
Methylmercury	Salvelinus namaycush (1 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.07 (residue)	--	Lake trout stocked annually as tagged fingerlings were netted and analyzed for mercury and methylmercury. Total mercury and the proportion of methylmercury to mercury increased with age but not sex.	Reche, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (2 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.11 (residue)	--	same as above	Reche, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (3 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.21 (residue)	--	same as above	Reche, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (4 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.34 (residue)	--	same as above	Reche, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (5 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.35 (residue)	--	same as above	Reche, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (6 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.45 (residue)	--	same as above	Reche, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (7 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.31 (residue)	--	same as above	Reche, et al (1971), AMIC-3818

Methylmercury	Salvelinus namaycush (8 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.51 (residue)	--	same as above	Roche, et al (1971), AMIC-3814
Methylmercury	Salvelinus namaycush (9 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.43 (residue)	--	same as above	Roche, et al (1971), AMIC-3818
Methylmercury	Salvelinus namaycush (11 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.41 (residue)	--	same as above	Roche, et al (1971), AMIC-3814
Methylmercury	Salvelinus namaycush (12 yr)	FL	Cayuga Lake, Ithaca, N.Y.	0.47 (residue)	--	same as above	Roche, et al (1971), AMIC-3818
Methylpentynol	Salmo gairdneri	BSA	--	870-1260 (T4)	a*,c,f	Methylpentynol was tested in 96-hour bioassays for its toxicity to rainbow trout, brown trout, brook trout, lake trout, northern pike, channel catfish, bluegills, largemouth bass, and walleyes. Channel catfish were the most resistent and lake trout the most sensitive. Two-inch rainbow trout, brown trout, and lake trout were more sensitive to methylpentynol than larger ones in the 96-hour exposures. The drug was more toxic to bluegills and rainbow trout with elevated temperatures. Toxicity was barely influenced by changes in water hardness.	Marking(1969), AMIC-5477
Methylpentynol	Salmo trutta	BSA	--	680-1100 (T4)	a*,c,f	same as above	Marking (1969),AMIC-5477
Methylpentynol	Salvelinus fontinalis	BSA	--	1100-1200 (T4)	a*,c,f	same as above	Marking(1969), AMIC-5477
Methylpentynol	Salvelinus namaycush	BSA	--	660-1160 (T4)	a*,c,f	same as above	Marking(1969), AMIC-5477
Methylpentynol	Esox lucius	BSA	--	less than 900 (T4)	a*,c,f	same as above	Marking (1969),AMIC-5477
Methylpentynol	Ictalurus punctatus	BSA	--	1700-1890 (T4)	a*,c,f	same as above	Marking(1969), AMIC-5477
Methylpentynol	Lepomis macrochirus	BSA	--	1260-1340 (T4)	a*,c,f	same as above	Marking(1969), AMIC-5477

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Methylpentynol	Micropterus salmoides	BSA	--	1100-1250 (T4)	a*,c,f	same as above	Harking(1969), AMIC-5477
Methylpentynol	Stizostedion vitreum	BSA	--	1140 (T4)	a*,c,f	same as above	Harking (1969),AMIC-5477
Methyl parathion	Lepomis cyanellus (Resistant)	BSA	--	greater than 5000 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant fish were compared to susceptible ones collected at Starkville.	Minchew, et al (1978), AMIC-5471
Methyl parathion	Lepomis cyanellus (Susceptible)	BSA	--	greaterthan 5000 (T2)	a*	same as above	Minchew, et al (1978), AMIC-5471
Methyl parathion	Notemigonus crysoleucas (Resistant)	BSA	--	greater than 5000 (T2)	a*	same as above	Minchew, et al (197C), AMIC-5471
Methyl parathion	Notemigonus crysoleucas (Susceptible)	BSA	--	greater than5000 (T2)	a*	same as above	Minchew, et al (1978), AMIC-5471
Methyl parathion	Ictalurus punctatus	BSA	--	5.71 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds; organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for	Hacek, et al (1978), AMIC-5518

						cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	
Methyl parathion	Ictalurus natalis	BSA	--	6.84 (T4)	S; synthetic test water	same as above	Macek,et al (1970), AMIC-9518
Methyl parathion	Carassius auratus	BSA	--	94.88 (T4)	S; synthetic test water	same as above	Macek, et al (1970), AMIC-9518
Methyl parathion	Cyprinus carpio	BSA	--	7.13 (T4)	S; synthetic test water	same as above	Macek, et al (1970), AMIC-9518
Methyl parathion	Pimephales promelas	BSA	--	8.98 (T4)	S; synthetic test water	same as above	Macek, et al (1970), AMIC-9518
Methyl parathion	Lepomis macrochirus	BSA	--	5.72 (T4)	S; synthetic test water	same as above	Macek, et al (1970), AMIC-9518
Methyl parathion	Lepomis microlophus	BSA	--	5.17 (T4)	S; synthetic test water	same as above	Macek, et al (1970), AMIC-9519
Methyl parathion	Micropterus salmoides	BSA	--	5.22 (T4)	S; synthetic test water	same as above	Macek, et al (1970), AMIC-9518
Methyl parathion	Salmo gairdneri	BSA	--	2.75 (T4)	S; synthetic test water	same as above	Macek, et al (1970), AMIC-9518
Methyl parathion	Salmo trutta	BSA	--	4.74 (T4)	S; synthetic test water	same as above	Macek,et al (1970), AMIC-9518
Methyl parathion	Oncorhynchus kisutch	BSA	--	5.38 (T4)	S; synthetic test water	same as above	Macek, et al (1970), AMIC-9518
Methyl parathion	Perca flavescens	BSA	--	3.86 (T4)	S; synthetic test water	same as above	Macek, et al (1970), AMIC-9518
Methyl parathion	Palaemonetes kadiakensis	BSA	--	0.0025-0.0233 (T1)	S[a]	Bioassays were conducted with shrimp from three areas of intensive	Naqvi, et al (1978),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(resistant)					pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; least toxic Chlordane, Sevin, and Heptachlor.	AMIC-9919
Methyl parathion	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0037 (T1)	a*	same as above	Neavi, et al (1970), AMIC-9919
Methyl parathion	Tubifex tubifex	FL and BSA	Reizoni, Miss.	6.00 (NTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Reizoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Reizoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Neavi, et al (1969), AMIC-9979
Mevinfos	Rasbora heteromorpha	BCFA and BSA	--	11.5 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water	Alabaster (1969), AMIC-9429

					species	and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Nilbox	Rasbora heteromorpha	BCFA and BSA	—	3.5 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
NM	Fundulus heteroclitus	BSA	—	0.0003-0.0006 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche, et al (1970), AMIC-445
NM	Nereis virens	BSA	—	0.00006-0.00043 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
Noaspill	Crangon crangon	BSA	—	1000-3300 (T4)	a*(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Nobilsol	Crangon crangon	BSA	—	10-33 (T2)	a*(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Molinate	Gammarus fasciatus	BSA	—	0.39 (T2), 0.30 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were	Sanders (1978), AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	
Molinate	Paleomontes kadiakensis	BSA	--	1.0(T2)	a*	same as above	Sanders (1978), AMIC-453
Molinate	Asellus brevicaudus	BSA	--	8.48 (T2)	a*	same as above	Sanders (1978), AMIC-453
Molinate	Orconectes nais	BSA	--	5.6 (T2)	a*	same as above	Sanders (1978), AMIC-453
Molinate	Daphnia magna	BSA	--	8.68 (T2)	a*	same as above	Sanders (1978), AMIC-453
Molinate	Cypridopsis vidua	BSA	--	8.18 (T2)	a*	same as above	Sanders (1978), AMIC-453
Molinate	Lepomis macrochirus	BSA	--	8.48 (T2)	a*	same as above	Sanders (1978), AMIC-453
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	8.1 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the	Stapleton (1968), AMIC-5988

Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.2(dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5989
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.2 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.2(ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5989
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.7 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5989
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.8(gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Molybdenum	Paralabrax clathratus (gravid females)	FM	CatalinaIsland, Cal.	0.6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.2 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.4(liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Molybdenum	Paralabrax clathratus	FM	Catalina Island, Cal.	0.4(integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Molybdenum	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	0.4 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Molybdenum	Paralabrax clathratus	FW	Catalina Island, Cal.	8.4(heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Molybdenum	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	1.9 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Molybdenum	Paralabrax clathratus	FW	Catalina Island, Cal.	4.8(eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Monoxene	Salmo gairdneri	BCFA and BSA	--	988 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Mono (N, N dimethyl alkyl amine) salt of endothall	Phaeodiue subiquum	L	--	0.5-10.0 (MTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1973), AMIC-642
Monuron	Salmo gairdneri	BCFA and BSA	--	88 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and	Alabaster (1969), AMIC-5425

					dilution water, or seawater for some species	percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Monuron	Mercenaria mercenaria (eggs)	L	--	greater than 5.8 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al(1969), AMIC-5998
Monuron	Mercenaria mercenaria (larvae)	L	--	greater than 5.8 (T12)	--	same as above	Davis, et al(1969), AMIC-5998
Morphothion	Cardium edule	BSA	--	greater than 10 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Morphothion	Crangon crangon	BSA	--	1.8-3.3 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
MS-222	Negaprion brevirostris (1-3 kg)	BSA	--	28.9 (SB 18 min)	s,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
MS-222	Lepomis macrochirus	BSA	—	38 (581)	a*	Little difference in nitrogen excretion rate was found between treated and control fish. Anaesthesia should have reduced nitrogen excretion but did not. The author believed that increased mucus secretion was a possible explanation for the results obtained.	Savitz (1969), AHIC-5838
Hystex LSC-P	Pesbora heteromorpha	BCFA and BSA	—	18 (T2, hardwater)	a*, c, e, f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AHIC-5425
Hystex LSC-P	Pesbora heteromorpha	BCFA and BSA	—	5.6 (T2, softwater)	a*, c, e, f, hard(HW) or soft (SW) synthetic dilution water, orseawater for some species	same as above	Alabaster (1969), AHIC-5425
Hystex LSE-L	Salmo gairdneri	BCFA and BSA	—	36 (T2)	a*, c, e, f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AHIC-5425
Hystex LSE-P	Salmo gairdneri	BCFA and BSA	—	24 (T2)	a*, c, e, f, hard (HW) or soft (SW) synthetic dilution water, or seawater	same as above	Alabaster (1969), AHIC-5425

					for some species		
Hystox LSL-L	Salmo gairdneri	BCFA and BSA	--	188 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Hystox LSL-P	Salmo gairdneri	BCFA and BSA	--	68 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Hystox LSL	Rasbora heteromorpha	BCFA and BSA	--	8.2 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Hystox LSL	Rasbora heteromorpha	BCFA and BSA	--	2.5 (T2, softwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Naban	Mercenaria mercenaria (eggs)	L	--	less than 8.5 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected	Davis, et al (1969),AMIC-5990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Naban	Mercenaria mercenaria (larvae)	L	--	1.75 (T12)	--	same as above	Davis, et al (1969), AMIC-5948
Naban	Crassostrea virginica (eggs)	L	--	less than 8.5 (T2)	--	same as above	Davis, et al (1969), AMIC-5948
Naico 281	Rasbora heteromorpha	BCFA and BSA	--	8.76 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Naico 248	Rasbora heteromorpha	BCFA and BSA	--	7.4 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425

Naico 243	Rasbora heteromorpha	BCFA and BSA	--	0.28 (T2)	a*,c,e,f; hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Naphthenic acids	Leocmis macrochirus	BSA, L	--	5.6 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 28 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 18-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Naphthenic acids	Nitzschia linearis	BSA, L	--	43.1 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Naphthenic acids	Physa heterostropha	BSA, L	--	7.1 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
NA	Fundulus heteroclitus	BSA	--	0.00018-0.00054 (T4)	a*,c,e,and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DD, CI, DD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Molluscs and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445
NA	Nereis virens	BSA	--	0.000007-0.0000 6 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
Neburon	Mercenaria mercenaria (eggs)	L	--	less than 2.4 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some,	Davis, et al(1969), AMIC-5998

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Neburon	Mercenaria mercenaria (larvae)	L	--	less than 2.4 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
Nemagon	Mercenaria mercenaria (eggs)	L	--	18.8 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Nemagon	Mercenaria mercenaria (larvae)	L	--	0.78 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
Neomycin sulfate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto(1978), AMIC-892
New BP 1188	Crangon crangon	BSA	--	3380-16,000 (T2)	aa(continuous, aeration, sea	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure	Portmann, et al (1971), AMIC-7781

					water, and daily solution renewal)	inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Nickel sulfate (as nickel)	Carcinus maenas	BSA	--	255 (T2)	as(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Nickel sulfate (as nickel)	Cardium edule	BSA	--	greater than 500 (T2)	as(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Nickel sulfate (as nickel)	Crangon crangon	BSA	--	125 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Nickel sulfate (as nickel)	Ostrea edulis	BSA	--	100-150 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Nickel sulfate (as nickel)	Pandalus montagui	BSA	--	13.9 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Nickel sulfate (as NiI2 plus)	Salmo gairdneri (eggs and sperm)	BSA	--	1.8 (NTE)	a,c,f	Data were given in mg/l which was taken to be the equivalent of ppm. Fertilization rates were statistically similar in both test (Cu and Ni) and control waters. The rate of hatching was significantly different for eggs exposed to Cu and the rate of development was increased. The authors concluded that in hard waters neither Cu nor Ni is likely to impair fertilization in rainbow trout.	Shaw, et al (1971), ANIC-1444
Nickel sulfate (as Ni)	Acroneuria	BSA	--	33.5 (T4)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), ANIC-3767
Nickel sulfate (as Ni)	Ephemerella	BSA	--	4 (T4)	a*,c,d,e,f	same as above	
Nickel sulfate (as Ni)	Hydropsyche	BSA	--	64 (T14)	a*,c,d,e,f	same as above	Warnick, et al(1969), ANIC-3767
Nickel sulfate (as Ni)	Phormidium ambiguum	L	--	8.9-18.8 (16 percent growth inhibited14)	--		Warnick, et al(1969), ANIC-3767
						Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (8.05 and 8.805 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1978), ANIC-892
Nickel (plus copper, zinc)	Salmo gairdneri	BSA	--	8.9-1.8 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for	Brown,et al (1978), ANIC-5994

						mixtures of copper and phenol: copper, zinc, and phenol: and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	
Nickel	Coregonus clupeaformis	FL	House Lake, Can.	0.2 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe,et al (1971), AMIC-3819
Nickel	Esox lucius	FL	House Lake, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Nickel	Esox lucius	FL	Lake St. Pierre, Can.	0.2 (residue)	--	same as above	Uthe, et al(1971), AMIC-3819
Nickel	Esox lucius	FL	Lake Erie, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Nickel	Osmerus mordax	FL	Lake Erie, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Nickel	Perca flavescens	FL	Lake Erie, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971),AMIC-3819
Nickel	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.2 (residue)	--	same as above	Uthe,et al (1971), AMIC-3819
Nickel	Paralabrax clathratus	FM	Scattergood Steam Plant, LosAngeles, Cal.	5 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel.	Stapleton (1968), AMIC-4968

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	
Nickel	Paralabrax clathratus	FN	Catalina Island, Cal.	6.4 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	9.8 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FN	Catalina Island, Cal.	6.1 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FN	Scattergood Steam Plant, LosAngeles, Cal.	14.7 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FN	Catalina Island, Cal.	22.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus (gravid females)	FN	Catalina Island, Cal.	8.6 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FN	Scattergood Steam Plant, LosAngeles, Cal.	3.9 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FN	Catalina Island, Cal.	7.6 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Nickel	Paralabrax clathratus	FN	Scattergood Steam Plant, LosAngeles, Cal.	9 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980

Nickel	Paralabrax clathratus	FW	Catalina Island, Cal.	18.2 (integument residue)	--	same as above	Stapleton (1968), AMIC-9948
Nickel	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	6.1 (heart residue)	--	same as above	Stapleton (1968), AMIC-9948
Nickel	Paralabrax clathratus	FW	Catalina Island, Cal.	19.8 (heart residue)	--	same as above	Stapleton (1968), AMIC-9948
Nickel	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	6.4 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-9948
Nickel	Paralabrax clathratus	FW	Catalina Island, Cal.	33.2 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-9948
Nickel	Salmo gairdneri	BSA	--	32.8 (72)	0.0.0	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol: copper, zinc, and phenol; and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al (1970), AMIC-9944
Nicotine	Negaprion brevirostris (1-3 kg)	BSA	--	34 (58)	0.0.0	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
Nicotine	Labeo rohita	L	--	1.0 (587)	0.0.0.?	This experiment showed that nicotine could be successfully used to live-capture fish from reservoirs. Fish surfaced and recovered rapidly when placed in freshwater. Fish remaining in test solutions above 4 ppm did not recover. This chemical was considerably less toxic to the aquatic insects studied.	Konar (1970), AMIC-9435

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Nicotine	Puntius sophore	L	--	1.0 (SBT)	s,d,a,f	same as above	Konar (1978), ANIC-9435
Nicotine	Ranatra filiformis	L	--	48 (NTE7)	s,d,a,f	same as above	Konar (1978), ANIC-9434
Nicotine	Dytiscus sp.	L	--	480 (NTE7)	s,d,a,f	same as above	Konar (1978), ANIC-9435
Nicotine	Heteropneustes fossilis	L	--	3.2 (TM 5 hr), K 16 hr)	--	Epidermal lesions of catfish barbels were moderate to severe after exposure noted. Barbel curling and inactivation were associated effects.	Konar(1969), ANIC-9726
Nitric acid	Agonus cataphractus	BSA	--	188-338 (T2)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), ANIC-7781
Nitric acid	Asterias rubens	BSA	--	188-338 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
Nitric acid	Carcinus maenas	BSA	--	188 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7781
Nitric acid	Cardium edule	BSA	--	338-1888 (T2)	as(contin-	same as above	Portmann, et

					ous, aeration, seawater, and daily solution renewal)		al (1971), AMIC-7781
Nitrilotriacetic acid (NTA)	Amphidinium carteri	L	--	18 (NTE)	SSH and NSW	NTA stimulated algal growth in cultures without added copper and reduced toxicity of copper at all levels of copper addition. See information on $CuCl_2 \cdot H_2O$ (as Cu) under authors cited for further information.	Erickson, et al (1978), AMIC-449
Nitrilotriacetic acid (NTA)	Chaetoceros sp	L	--	18 (NTE)	SSH and NSW	same as above	Erickson, et al(1978), AMIC-449
Nitrilotriacetic acid (NTA)	Cyclotella nana	L	--	18 (NTE)	SSH and NSW	same as above	Erickson, et al(1978), AMIC-449
Nitrilotriacetic acid (NTA)	Dunaliella tertiolecta	L	--	18 (NTE)	SSH and NSW	same as above	Erickson, et al (1978), AMIC-449
Nitrilotriacetic acid (NTA)	Isochrysis galbana	L	--	18 (NTE)	SSH and NSW	same as above	Erickson,et al (1978), AMIC-449
Nitrilotriacetic acid (NTA)	Monochrysis lutheri	L	--	18 (NTE)	SSH and NSW	same as above	Erickson, et al (1978), AMIC-449
Nitrilotriacetic acid (NTA)	Nannochloris oculata	L	--	18 (NTE)	SSH and NSW	Erickson, et al (1978), AMIC-449	Nitrilotriacetic acid (NTA)
Nitrilotriacetic acid	Nitzschia closterium	L	--	10 (NTE)	SSH and NSW	same as above	Erickson, et al (1970), AMIC-449
Nitrilotriacetic acid	Olisthodiscus luteus	L	--	(10 NTE)	SSH and NSW	same as above	Erickson, et al (1970), AMIC-449
Nitrilotriacetic acid	Platymonas subcordiformis	L	--	(10 NTE)	SSH and NSW	same as above	Erickson, et al (1970), AMIC-449
Nitrilotriacetic acid	Porphyridium cruentum	L	--	(10 NTE)	SSH and NSW	same as above	Erickson, et al (1970), AMIC-449

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Nitrofurazone	Mercenaria mercenaria (eggs)	L	--	greater than 100.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969). ANIC-5498
Nitrofurazone	Mercenaria mercenaria (larvae)	L	--	greater than 100.0 (T12)	--	same as above	Davis, et al (1969). ANIC-5498
Nitrogen (dissolved)	Oncorhynchus tshawytscha (juveniles)	FR, BS CH	Priest Rapids Dam, Wash.	Super saturation (N54)	a	The nitrogen gas regime in the Columbia River was studied in 1966 in order to determine whether high levels of dissolved nitrogen might be responsible for losses of adult salmon and poor production of young fish at spawning channels. Examinations of dead juvenile salmon revealed that most fish had symptoms of "gas bubble disease". Juvenile salmon kept at sufficient depth to compensate for the supersaturation of dissolved nitrogen were free of symptoms of gas bubble disease. Fish under stress from the supersaturation of dissolved nitrogen were very intolerant to temperature increases.	Ebel (1969 ANIC-6198
Nitrogen (dissolved)	Salmo gairdneri (adults)	FR	McNary Dam, Wash.	Supersaturation (NTE 35)	a	same as above	Ebel (1969). ANIC-6198
Nitrogen (dissolved)	Oncorhynchus kisutch (juveniles)	FR, BSCH	Priest RapidsDam, Wash.	Super saturation (6-16 percent	a	same as above	Ebel (1969). ANIC-6198

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Nitrogen (dissolved)	Oncorhynchus nerka (adults)	FR	McNary Dam, Wash.	Supersaturation a (5835)		same as above	Ebel (1969), AMIC-6198
Ni, Cu, Cr, CN, and Zn (wastewater)	Pimephales promelas	BSACF (ML)	Grand River at Wyoming, Michigan	approx. 1.67 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	A mobile bioassay unit was utilized to conduct this study of municipal wastewater containing the indicated toxicants. River water was used as diluent. The conclusion was reached that synergistic or additive toxic effects occurred since toxicity was greater than that of any of the ions singly.	Zillich (1969), AMIC-2986
Ni, Cu, Cr, CN, and Zn (wastewater)	Catostomus commersoni	BSACF (ML)	Grand River at Wyoming, Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	same as above	Zillich (1969), AMIC-2986
Nonyl phenol 12 (plus ethylene oxide)	Carcinus maenas	BSA	--	greater than 188(T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Nonyl phenol 12 (plus ethylene oxide)	Cardium edule	BSA	--	92.5 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Nonyl phenol 12 (plus ethylene oxide)	Crangon crangon	BSA	--	89.5 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Nonyl phenol 12 (plus ethylene oxide)	Pandalus montagui	BSA	--	19.3 (T2)	ae(continuous, aeration, sea-	same as above	Portmann, et al (1971), AMIC-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					water, and daily solution renewal)		7701
Hores	Gammarus fasciatus	BSA	--	1.4 (T4)	s*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 96 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Norseman	Crangon crangon	BSA	--	3.3-18 (T4)	ss(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
NPH 1253	Rasbora heteromorpha	BCFA and BSA	--	8.14 (T2)	s*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
NPH 1313	Rasbora heteromorpha	BCFA and BSA	--	11 (T2)	s*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or	same as above	Alabaster (1969), AMIC-5425

					seawater for some species		
NPH 1313	Rasbora heteromorpha	BCFA and BSA	--	5.8 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Nuclidol diazinon sheep dip	Rasbora heteromorpha	BCFA and BSA	--	1.45 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster, (1969), AMIC 5425
Nystatin	Phormidium ambiguum	L	--	8.5-10.3 (MTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (8.85 and 8.885 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1978), AMIC-892
N-methyl carbamate derivitive	Rasbora heteromorpha	BCFA and BSA	--	8.58 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					species	pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
M-3452	Crassostrea virginica (eggs)	L	--	less than 8.5 (T2)	--	The effect of 42 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
M-3452	Crassostrea virginica (larvae)	L	--	less than 8.5 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
M-3514	Mercenaria mercenaria (eggs)	L	--	less than 1.8 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
M-3514	Mercenaria mercenaria (larvae)	L	--	less than 1.8 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
M-3514	Crassostrea virginica (eggs)	L	--	less than 1.8 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
M-3514	Crassostrea virginica (larvae)	L	--	less than 1.8 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
Octyl phenol 11 (plus ethylene oxide)	Cercinus maenas	BSA	--	greater than188 (T2)	a* (continuous aeration, seawater,	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine	Portmann, et al (1971), AMIC-7781

					and daily solution renewal)	organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Octyl phenol 11 (plus ethylene oxide)	Cardium edule	BSA	--	19.6(T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Octyl phenol 11 (plus ethylene oxide)	Crangon crangon	BSA	--	63(T4)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Octyl phenol 11 (plus ethylene oxide)	Pandalus montagui	BSA	--	10.8 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
Octyl phenol 11 (plus ethylene oxide)	Platichthys flesus	BSA	--	33-100 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
OD	Fundulus heteroclitus	BSA	--	0.0085 (T4)	s°,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MM, TN, BP, and MA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche,et al (1970), AMIC-445

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
DD	Nereis virens	BSA	--	0.00014-0.00094 (T4)	s*,c,e, and synthetic seawater	same as above	LaRoche,et al (1978), AMIC-445
Oil herder	Crangon crangon	BSA	--	3388-10,000 (T4)	ss(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Oil (crude)	Palaemonetes vulgaris	BSA	--	greater than 1.0 (T4)	s*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 240 hr values. The dispersants were designated as CX, DD, CI, OD, AQ, PC, HH, TH, BP, and HA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1978), AMIC-445
Oil (crude oil B)	Fundulus heteroclitus	BSA	--	0.0082 (T4)	s*,c,e, and synthetic seawater	same as above	LaRoche, et al (1978), AMIC-445
Oil (crude oil B)	Nereis virens	BSA	--	0.0861 (T4)	s*,c,e, and synthetic seawater	same as above	LaRoche, et al (1978), AMIC-445
Oil (refined)	Palaemonetes vulgaris	BSA	--	0.00885 (T4)	s*,c,e, and synthetic seawater	same as above	LaRoche, et al (1978), AMIC-445
Benzene	Mercenaria mercenaria (eggs)	L	--	0.881 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported.	Davis, et al (1969),AMIC-5998

							Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Benzene	Mercenaria mercenaria (larvae)	L	--	0.38 (T12)	--		same as above	Davis, et al (1969), AMIC-5998
Benzene	Crassostrea virginica (eggs)	L	--	0.878 (T2)	--		same as above	Davis, et al (1969), AMIC-5998
Benzene	Crassostrea virginica (larvae)	L	--	0.34 (T14)	--		same as above	Davis, et al (1969), AMIC-5998
Orthodichlorobenzene	Mercenaria mercenaria (eggs)	L	--	greater than 188.8 (T2)	--		The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Orthodichlorobenzene	Mercenaria mercenaria (larvae)	L	--	greater than 188.8 (T12)	--		same as above	Davis, et al (1969), AMIC-5998
Oxine-copper	Salmo gairdneri	BCFA and BSA	--	0.14 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or		One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Oxygen	Lepomis macrochirus	BCF	--	0 to saturation (SBB)	a,e*	Fish 15-20 cm long were exposed to gradual hypoxia stress to determine the effect on skeletal muscle and liver lactate and pyruvate. Tests were conducted at 5 and 20 C with DO reduced from saturation to zero over an 8-hour period. Low DO increased lactic acid concentrations in muscle and liver at both temperatures; pyruvic acid levels remained constant. Lactic acid levels were higher at 5 C than at 20 C, and fish were better able to tolerate low oxygen levels at the lower temperature.	Burton (1978), ANIC-6389
o-dichlorobenzene (50 percent plus 20 percent cresylic acid)	Rasbora heteromorpha	BCFA and BSA	--	5.0 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, orseawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-5425
o,o-diethyl o-2 pyrazinyl phosphorothiate	Rasbora heteromorpha	BCFA and BSA	--	8.85(T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), ANIC-5425

Paraquat-di (methyl) chloride	Rasbora heteromorpha	BCFA and BSA	—	32 (T2)	a*,c,e,f,h ard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969),AMIC-5425
Paraquat	Chara sp	FL	Jefferson County., Colo.	1.14(K16)	a,c,d,e,g, and water stage	Paraquat almost eliminated Chara sp. in 16 days and gave initial control of Spirogyra sp. The latter recovered within 3 mos. Fish deaths and other effects occurred within 48 hr. Paraquat was recovered from mud 99 days after application, indicating that this herbicide can be very persistent. This study was conducted in 1964. Livecar exposure of some fish was one technique employed.	Earnest (1971), AMIC-5564
Paraquat	Water (bottom)	FL	Jefferson County., Colo.	1.14 (1.5 ppm max residue3 hr)	a,c,d,e,g, and water stage	same as above	Earnest (1971),AMIC-5564
Paraquat	Mud	FL	Jefferson County., Colo.	1.14 (15.9 ppm maxresidue 16 residue 16d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Spirogyra sp	FL	Jefferson County., Colo.	1.14 (K16)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Chara sp	FL	Jefferson County., Colo.	1.14 (2300 ppm max tissue residue 8d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Spirogyra sp	FL	Jefferson County., Colo.	1.14 (1300 ppm max tissue residue 4d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564
Paraquat	Rainbow trout	FL	Jefferson County., Colo.	1.1 (1.9ppm max tissue residue 1d) 1	a,c,d,e,g, and water stage	same as above	Earnest (1971),AMIC-5564
Paraquat	Channel catfish	FL	Jefferson County., Colo.	1.1 (1.3 ppm max tissue residue 1d) 1	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5564

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Paraquat	Green sunfish	FL	Jefferson County., Colo.	1.1 (2.1ppm max tissueresidue 16 d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5964
Paraquat	Bluegills	FL	Jefferson County., Colo.	1.1 (1.6 ppmmax tissueresidue 8 d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5964
Paraquat	Water (top)	FL	Jefferson County., Colo.	1.14 (0.6 ppm max residue3 hr-1 d)	a,c,d,e,g, and water stage	same as above	Earnest (1971), AMIC-5964
Paraquat	Cardium edule	BSA	--	greater than 10 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Paraquat	Crangon crangon	BSA	--	greater than 10 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Parathion (plus 0.25 ppm LAS)	Pimephales promelas	BCFA	--	0.8 (2.5 percent K)	a*,e	LAS acted synergistically with parathion to cause less survival of fatheds but had an indeterminate effect with DDT and no synergistic effect with Endrin.	Solon, et al (1969), AMIC-3785
Parathion (plus 0.5 ppm LAS)	Pimephales promelas	BCFA	--	0.8 (61.5 percent K)	a*,e	same as above	Solon, et al (1969), AMIC-3785
Parathion (plus 1 ppm LAS)	Pimephales promelas	BCFA	--	0.8 (95 percent K)	a*,e	same as above	Solon, et al (1969), AMIC-3785

Parathion (Sesamex pretreatment at 2 ppm)	Notemigonus chrysoleucas	L	--	0.20 (46percent AChE inhibition)	--	Fish brain AChE activity was not affected by Sesamex alone but was significantly inhibited by parathion. Pretreatment with Sesamex at 2 ppm resulted in decreased inhibition of AChe activity by parathion.	Gibson, et al (1971), AMIC-3799
Parathion (Sesamex pretreatment at 2 ppm)	Lepomis cyanellus	L	--	0.20 (40 percentAChE inhibition)	--	same as above	Gibson, et al (1971), AMIC-3799
Parathion (Sesamex pretreatment at 2 ppm)	Lepomis macrochirus	L	--	0.20 (47percent AChE inhibition)	--	same as above	Gibson, et al (1971), AMIC-3799
Parathion	Lepomis macrochirus (brain tissue)	L	--	0.75 (SB 38 min. invitro)	--	This study was conducted to determine whether brain tissue and handling variables (freezing-thawing) affected AChE assays. AChE inhibition of 25 percent occurred at 750 ppb. Considerable variation occurred, i.e., no symptoms were evident and fish recovered after experiencing 98 percent AChE inhibition. The authors recommend standardization of handling procedures and fish strain.	Gibson, et al (1969), AMIC-3787
Parathion	Pimephales promelas	BCFA	--	1.4 (T4)	a*,e	LAS acted synergistically with parathion to cause less survival of fatheds but had an indeterminate effect with DDT and no synergistic effect with Endrin.	Solon, et al(1969), AMIC-3785
Parathion	Pimephales promelas	BCFA	--	0.8 (5 percent K)	a*,e	same as above	Solon, et al(1969), AMIC-3785
Parathion	Notemigonus chrysoleucas	L	--	0.20 (67 percent AChE inhibition)	--	Fish brain AChE activity was not affected by Sesamex alone but was significantly inhibited by parathion. Pretreatment with Sesamex at 2 ppm resulted in decreased inhibition of AChe activity by parathion.	Gibson, et al (1971), AMIC-3799
Parathion	Lepomis cyanellus	L	--	0.20 (74 percent AChE inhibition)	--	same as above	Gibson, et al (1971), AMIC-3799
Parathion	Lepomis macrochirus	L	--	0.20 (68 percent AChE inhibition)	--	same as above	Gibson, et al(1971), AMIC-3799

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Parathion	Lepomis cyanellus (Resistant)	BSA	—	0.28 (T2)	a*	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant fish were compared to susceptible ones collected at Starkville.	Minchew, et al(1978), AMIC-5471
Parathion	Lepomis cyanellus (Susceptible)	BSA	—	0.21 (T2)	a*	same as above	Minchew, et al(1978), AMIC-5471
Parathion	Notemigonus crysoleucas (Resistant)	BSA	—	2.88 (T2)	a*	same as above	Minchew, et al(1978), AMIC-5471
Parathion	Notemigonus crysoleucas (Susceptible)	BSA	—	1.98 (T2)	a*	same as above	Minchew, etal (1978), AMIC-5471
Parathion	Palaemonetes kadiakensis (non-resistant)	BSA	—	0.0871 (T1)	a*	same as above	Haavi, et al (1978), AMIC-5519
Parathion	Palaemonetes kadiakensis (resistant)	BSA	—	0.0866-0.0118 (T1)	a*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane,	Haavi, et al (1978), AMIC-5519

							Toxaphene, Strobane® lease toxic Chlordane, Sevin, and Heptachlor.	
Parathion	Notemigonus crysoleucas	L	—	0.5 (SR 1-2)	—		Fish exposed as indicated had significant or highly significant changes in hematocrit, leucocytes, lymphocytes, heterophils, and in body weight. No significant changes were noted in body length, or erythrocyte total and fragility. The authors state that effects on hemopoiesis and cell membranes could produce the results reported.	Butler, et al (1969). AMIC-5977
Parathion	Tubifex tubifex	FL and BSA	Belzoni, Miss.	2.88 (MTE)	—		The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Meevi, etal (1969). AMIC-5979
Parathion	Cardium edule	BSA	—	3.3-18 (T2)	as(continuous aeration, seawater, and daily solution renewal)		One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971). AMIC-7701
Parathion	Crangon crangon	BSA	—	0.003-0.01 (T2)	as(continuous aeration, seawater, and daily solution renewal)		same as above	Portmann, et al (1971). AMIC-7701
Parathion	Pleuronectes platessa	BSA	—	0.03-0.18 (T2)	as(continuous aeration, seawater, and		same as above	Portmann, et al (1971). AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					daily solution renewal)		
Parathion	Ictalurus nebulosus	BCFA	--	0.8-3.8 (K up to 38 d)	a*,c,d,e,f,g	Catfish blood content of parathion was shown to be directly correlatable with water content, lethality, and sublethal symptoms. Freeze-thawing of blood five times resulted in disruption of blood cells and release of unaltered parathion thus indicating that this pesticide is not readily and completely metabolized in fish.	Mount, et al (1969), AMIC-11
Parathion	Ictalurus nebulosus	BCFA	--	18-88 (blood residue)	a*,c,d,e,f,g	same as above	Mount,et al (1969), AMIC-11
PCB	White sucker	FRL	Misc. states	0.27-14.8 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 50 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson, et al(1971), AMIC-1487
PCB	Yellow perch	FRL	Misc. states	0.28-12.6 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
PCB	Chain pickerel	FRL	Misc. states	0.45 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
PCB	White catfish	FRL	Misc. states	less than 0.10-2.16 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	White perch	FRL	Misc. states	less than 0.10-7.68 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487

PCB	Goldfish	FRL	Misc. states	9.58 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Pumpkinseed	FRL	Misc. states	2.68 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Largemouth bass	FRL	Misc. states	less than 0.10-8.87 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Brown bullhead	FRL	Misc. states	0.34-4.88 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Carp	FRL	Misc. states	less than 0.10-11.7 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Channel catfish	FRL	Misc. states	less than 0.10-6.77 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Redhorse sucker	FRL	Misc. states	less than 0.10-0.25 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Gizzard shad	FRL	Misc. states	0.22-0.86 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Spotted sucker	FRL	Misc. states	less than 0.10 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Bluegills	FRL	Misc. states	0.35-1.19 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Redbreast sunfish	FRL	Misc. states	0.15 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Striped mullet	FRL	Misc. states	less than 0.10-1.39 residue (SB)	--	same as above	Henderson, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-1487
PCB	Blue catfish	FRL	Misc. states	less than 8.18 residue (SB)	--	same as above	Henderson, et al (1971), AMIC -1487
PCB	Rock bass	FRL	Misc. states	8.39-4.18 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
PCB	Freshwater drum	FRL	Misc. states	1.94 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
PCB	Gloster	FRL	Misc. states	1.24-3.47 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Lake whitefish	FRL	Misc. states	1.96 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
PCB	Lake trout	FRL	Misc. states	2.64-2.84 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
pcb	White crappie	FRL	Misc. states	8.83-1.79 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
PCB	Bigmouth buffalo	FRL	Misc. states	less than 8.18-1.21 residue(SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Smallmouth buffalo	FRL	Misc. states	2.46 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
PCB	Flathead catfish	FRL	Misc. states	3.88 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
PCB	Goldeye	FRL	Misc. states	8.18-2.39 residue (SB)	--	same as above	Henderson, et al(1971),

							AMIC-1487
PCB	Walleye	FRL	Misc. states	0.22 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Sauger	FRL	Misc. states	1.89 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Flannelmouth sucker	FRL	Misc. states	2.14 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Black bullhead	FRL	Misc. states	0.15-0.21 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	White bass	FRL	Misc. states	1.84 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Black crappie	FRL	Misc. states	less than 0.18-1.83 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Largescale sucker	FRL	Misc. states	less than 0.18-1.16 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Smallmouth bass	FRL	Misc. states	less than 0.18 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Northern squawfish	FRL	Misc. states	0.58-1.19 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Chiselmouth	FRL	Misc. states	0.71-0.98 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Klamath sucker	FRL	Misc. states	0.13 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
PCB	Rainbow trout	FRL	Misc. states	0.27-5.48 residue (SB)	--	same as above	Henderson, et al (1971),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-1487
PCB	Bridgelip sucker	FRL	Misc. states	2.75 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
PCB	Arctic grayling	FRL	Misc. states	1.42 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
PCB	Pound whitefish	FRL	Misc. states	2.62 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
PCB	Longnose sucker	FRL	Misc. states	1.53-3.87 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
PCB	Sebastedes sp.	FD	Pacific Ocean, Cal.	1.8 (liver residue)	--	Samples of marine animals were collected from three locations off the coast of Southern California and analyzed for residues of chlorinated hydrocarbons. The data suggest that Kellet"s whelk would be a good indicator organism for studying the regional distribution of chlorinated hydrocarbons.	Hunson (1972), AMIC-3896
PCB	Paralabrax nebulifer	FD	Pacific Ocean, Cal.	0.24 (liver residue)	--	same as above	Hunson(1972), AMIC-3896
PCB	Anisotremus davidsoni	FD	Pacific Ocean, Cal.	0.51 (liver residue)	--	same as above	Hunson(1972), AMIC-3896
PCB	Pleuronectedon pulchrus	FD	Pacific Ocean, Cal.	0.29 (liver residue)	--	same as above	Hunson(1972), AMIC-3896
PCB	Haliotis rufescens	FD	Pacific Ocean, Cal.	less than 2.8 (gonad residue)	--	same as above	Hunson (1972), AMIC-3896
PCB	Strongylocentrotus franciscanus	FD	Pacific Ocean, Cal.	0.12-0.21 (gonad residue)	--	same as above	Hunson (1972), AMIC-3896
PCB	Hinnites multirugosis	FD	Pacific Ocean, Cal.	0.5 (gonad residue)	--	same as above	Hunson(1972), AMIC-3896

PCB	Hallotis corrugata	FO	Pacific Ocean, Cal.	0.088 (gonad residue)	--	same as above	Hunson (1972), AMIC-3896
PCB	Kellotia kelletii	FO	Pacific Ocean, Cal.	0.23 (residue)	--	same as above	Hunson (1972), AMIC-3896
PCB	Penulirus interruptus	FO	Pacific Ocean, Cal.	0.16 (muscle residue)	--	same as above	Hunson(1972), AMIC-3896
PCB	Anguilla rostrata	FRL	St. John, N.B., Can.	0.71 (residue)	--	PCB"s were found in higher concentrations than organochlorine pesticides in all fish analyzed. The authors point out that PCB is less toxic in an acute sense than organochlorines, that little is known of sublethal PCB effects, and that more knowledge of PCB distribution and effects is needed.	Zitko (1971); AMIC-3715
PCB	Sebastodes marinus	FRL	St. John, N.B., Can.	trace (residue)	--	same as above	Zitko (1971), AMIC-3715
PCB	Esox niger	FRL	St. John, N.B., Can.	0.33 (residue)	--	same as above	Zitko (1971), AMIC-3715
PCB	Salmo salar	FRL	St. John, N.B., Can.	0.45 (residue)	--	same as above	Zitko (1971), AMIC-3715
PCB	Clupea harengus	FRL	St. John, N.B., Can.	0.32-0.54 (residue)	--	same as above	Zitko(1971), AMIC-3715
PCB	Scomber scombrus	FRL	St. John, N.B., Can.	0.39 (residue)	--	same as above	Zitko (1971), AMIC-3715
PCB	Mytilus edulis	FRL	St. John, N.B., Can.	0.14 (residue)	--	same as above	Zitko (1971), AMIC-3715
PCB	Gadus morhua	FRL	St. John, N.B., Can.	0.02 (residue)	--	same as above	Zitko (1971), AMIC-3715
PCB	Urophycis tenuis	FRL	St. John, N.B., Can.	0.02 (residue)	--	same as above	Zitko (1971), AMIC-3715

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
PCB	Hippo-glossoides platessoides	FRL	St. John, N.B., Can.	8.83 (residue)	--	same as above	Zitko (1971), AMIC-3715
PCB	Falco peregrinus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	18.2 (residue)	--	Peregrine falcons, falcon prey, and other predator species were collected widely and analyzed for DDT, DDE, PCB, and a few other pesticides to a lesser degree. PCB and DDT were found to be widely dispersed globally. PCB was found to be a powerful inducer of hepatic enzymes that degrade oestradiol. Reductions in thickness of egg shells, eggshell weight, and water retention occurred. All affect hatching success. The authors state that the peregrine may be the first species entiroated by global contamination.	Risebrough, et al (1968), AMIC-3844
PCB	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.16-84 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco peregrinus (immature)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	3.2-1,428 (fat residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco peregrinus (adult)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	19.7-41.5 (flesh residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco peregrinus (adult)	F	Western U.S., Pacific	3.2-1,980 (fat residue)	--	same as above	Risebrough, et al (1968),

							AMIC-3844
			Ocean, Panama, Mexico, and Antarctic				
PCB	Loomelania melania	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.8 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Halocyptena microsoma	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.35 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Piranyx vivesi	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.82 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Endomychura craveri (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	4.5 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Thalasseus elegans (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	1.5 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Larus heermani (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.1 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
PCB	Pomoxis annularis	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.884 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Pomoxis nigro-maculatus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.803 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Lepomis macrochirus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.885 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Pygoscelis adeliae (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.844 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Fulmanus glacialis	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.88-6.5 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Puffinus creatopus	F	Western U.S., Pacific Ocean, Panama,	0.42 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

				Mexico, and Antarctic				
	PCB	Puffinus griseus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.9-1.2 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	PCB	Puffinus tenuirostris	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	2.1 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	PCB	Oceanodroma homochroa	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	9.8 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	PCB	Pelecanus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0184-0.0231 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	PCB	Fregata magnificens (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0057-0.004 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	PCB	Sula leucogaster	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0048 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
	PCB	Phalacrocorax	F	Western	0.113	--	same as above	Risebrough,

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	penicillatus (eggs)		U.S., Pacific Ocean, Panama, Mexico, and Antarctic	(residue)			et al (1968), AMIC-3844
PCB	Phalacrocorax pelagicus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.862 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Anas cyanoptera	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.91 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Elanus leucurus (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.88884-8.8864 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Accipiter cooperii	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	6.3 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Aquila chrysaetos (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	8.23 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

PCB	Pandion haliaetus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0834-0.183 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco columbarius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.39 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco sparverius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.31 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Falco sparverius (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.89 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Nycticorax nycticorax (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.823-0.33 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Larus occidentalis (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.823-1.31 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Sterna forsteri (eggs)	F	Western U.S., Pacific Ocean,	0.114 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Panama, Mexico, and Antarctic				
PCB	Hydroprogne caspia (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.114-1.81 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Phalacrocorax fulicarius	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.18 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Uria aalge (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	45 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Ptychoramphus aleuticus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.16 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Synthliboramphus antiquus	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.15 (whole body residue)	--	same as above	Risebrough, et al. (1968), AMIC-3844
PCB	Cerorhinca monocerata	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.36 (whole body residue)	--	same as above	Risebrough, et al (1968), AMIC-3844

PCB	Zenaidura macroura	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	No residue	--	same as above	Risebrough, et al (1968), AMIC-3844
PCB	Tyto alba (eggs)	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.47-0.66 (residue)	--	same as above	Risebrough, etal (1968), AMIC-3844
PCB	Sturnella neglecta	F	Western U.S., Pacific Ocean, Panama, Mexico, and Antarctic	0.0025-0.0261 (residue)	--	same as above	Risebrough, et al (1968), AMIC-3844
PC	Fundulus heteroclitus	BSA	--	0.00024-0.0004 (T4)	a*,c.e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 248 hr values. The dispersants were designated as CX, DO, CI, OD, AQ, PC, MM, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Molluscs and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1978), AMIC-445
PC	Nereis virens	BSA	--	0.00068-0.00075 (T4)	a*,c.e, and synthetic seawater	same as above	LaRoche,et al (1978), AMIC-445
Pebulate	Gammarus fasciatus	BSA	--	18.8 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978), AMIC-453
Penetone X	Crangon crangon	BSA	--	18-33 (T2)	ae(continuous, aeration, sea-	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					water, and daily solution renewal)	inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
Pentachlorophenol	Crassostrea virginica (eggs)	L	--	less than 0.25 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Pentachlorophenol	Crassostrea virginica (larvae)	L	--	0.871 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
Pentachlorophenyl acetate	Crassostrea virginica (eggs)	L	--	less than 0.25 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
Pentachlorophenyl acetate	Crassostrea virginica (larvae)	L	--	less than 0.025 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
Perelin No. 5	Crangon crangon	BSA	--	3.3-18 (T2)	aa(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Perthane	Tubifex tubifex	FL and	Belzoni, Miss.	0.58 (MTE)	--	The response of pesticide-resistant aquatic organisms to	Neavi, et al (1969),

			BSA			various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	AMIC-5979
	Petrolite W-1439	Steelhead trout (fingerlings)	BSA	--	39.5 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7664 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
	Petrolite W-1439	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	1.5 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
	Phenkapton	Fish (not specified)	--	--	greater than 1.8-18.8 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas(1971) AMIC-1056
	Phenobarbital	Negaprion brevirostris (1-3 kg)	BSA	--	388 (NTE3.25 hr)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
	Phenobarital	Carassius auratus	L	--	75 (NTE)	a*	Goldfish were exposed to increasing concentrations of DDT and residues determined after 21 days of exposure. Most DDT had been converted to DDE. Phenobarital had no significant effect on insecticide residues.	Young, et al (1971), AMIC-3796
	Phenolics	Fish (not specified)	--	--	greater than 8.1-1.8 (K)	--	Approximate toxicities of numerous pesticides commonly used in	Mawdesley-Thomas

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	(1971), ANIC-1056
Phenols (plus ammonia and zinc)	Salmo gairdneri	BSA	--	8.5-2.54 (T2)	a,c*,d,e*, f,m	Rainbow trout were exposed to concentrations of fluctuating levels of ammonia, phenol, and zinc and to constant mixtures of the three. Tests with fluctuating levels of toxicants showed that LC50 values were similar to those for constant concentrations as long as the periodicity of the fluctuation did not exceed the resistance time for the poison. Except when zinc predominated in the mixtures, the fractional toxicities could be summed to give the toxicity of the mixture.	Brown, et al (1969), ANIC-5993
Phenols (plus copper)	Salmo gairdneri	BSA	--	8.5-1.75 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol, copper, zinc, and phenol; and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al (1978), ANIC-5994
Phenols (plus copper, zinc)	Salmo gairdneri	BSA	--	8.6-2.48 (T2)	a,c,e	same as above	Brown, et al (1978), ANIC-5994
Phenols	Rashora heteromorpha	BCFA and BSA	--	6.2 (T2, hardwater)	a*,c,e,f, hard (HH) orsoft (SH) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-5425

Phenols	Rasbora heteromorpha	BCFA and BSA	--	7.4 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Phenols	Lepomis macrochirus	BSA, L	--	13.9 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Phenols	Nitzschia linearis	BSA, L	--	258 (T9)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Phenols	Physa heterostrocha	BSA, L	--	94 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Phenols	Mercenaria mercenaria (eggs)	L	--	52.6 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Phenols	Mercenaria mercenaria (larvae)	L	--	55 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
Phenols	Crassostrea virginica	L	--	98.3 (T2)	--	same as above	Davis, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(eggs)						(1969), AMIC-5998
Phenols	Salmo gairdneri	BSA	--	9.4 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol: copper, zinc, and phenol: and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al (1970), AMIC-5994
Phenols	Gambusia affinis (female, 4.3 cm, 1.9 g)	BSA	--	26 (T4)	a,c,d, e,f,i, (Honolulu tap water)	The five fish species are commonly found in streams and estuaries in semi-tropical areas. G. affinis was the most tolerant. Varied sensitivity to the toxicants were found. K. sandvicensis was the most sensitive fish studied. The standard method procedure was followed.	Hunegawa, et al (1978), AMIC-6567
Phenols	Lebistes reticulatus (male, 1.8 cm, 0.2 g)	BSA	--	31 (T4)	a,c,d, e,f,i, (Honolulu tap water)	same as above	Hunegawa, et al (1978), AMIC-6567
Phenols	Tilapia mossambica (3.4 cm, 1.3 g)	BSA	--	19 (T4)	a,c,d,e, e,f,i, (Honolulu tap water	same as above	Hunegawa, et al (1978), AMIC-6567
Phenols	Kuhlia sandvicensis (4.3 cm, 1.5 g)	BSA	--	11 (T4)	a,c,d,e,f, i, saltwater	same as above	Hunegawa, et al (1978), AMIC-6567
Phenols	Stolephorus purpurea (3.6 cm, 0.4 g)	BSA	--	8.51 (T12 hr)	a,c,d,e,f, i, salt water	same as above	Hunegawa, et al (1978), AMIC-6567
Phenols	Carcinus maenas	BSA	--	56 (T2)	ae(continuous aeration, sea-water, and	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were	Portmann, et al (1971), AMIC-7761

						daily solution renewal)	evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	
	Phenols	Cardius edule	BSA	--	greater than 588 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Phenols	Crangon crangon	BSA	--	23.5 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Phenols	Pandalus montequi	BSA	--	17.5 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Phenols	Platichthys flesus	BSA	--	33-188 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Phenols	Ambassis safgha	BSA	--	13.5 (T1)	s*, seawater	Measurement of residual dissolved oxygen during exposure of fish to toxicants resulted in data similar to that obtained from 24- and 48-hr bioassays by the standard method. The residual oxygen method required only 8 hr to conduct. Variables studied included density per unit volume, temperature, and fish size. The authors conclude that the residual oxygen method is a quick and	Ballard, et al (1969), AMIC-388

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						reliable procedure for routine monitoring work.	
Phenoxylene	Crangon crangon	BSA	--	greater than 10 (T2)	ae(continuous, aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Phenoxytol	Pasbora heteromorpha	BCFA and BSA	--	135 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5429
Phenylmercuric acetate	Brachydanio rerio (breeding adults and eggs)	L	--	0.2 and 1.0 ppb (8)	a*,f	Eggs were collected daily from spawning females which were continuously exposed to water solutions of the chemical. Dead and hatched eggs were counted daily with daily water renewal and removal of dead eggs. At 1.0 ppb the number of eggs released was significantly less, and at 0.2 and 1.0 ppb hatching frequency was significantly reduced.	Kihlstrom, et al (1971), AMIC-2787
Phenyl mercuric acetate	Salmo gairdneri	BCFA and BSA	--	0.885 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5429
Phenyl mercuric acetate	Salmo gairdneri	BCFA and BSA	--	0.884 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic	same as above	Alabaster (1969), AMIC-5429

					dilution water, or seawater for some species		
Phorate	Fish (not specified)	--	--	greater than 0.01-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mandsley-Thomas (1971), AMIC-1056
Phordane	Crangon crangon	BSA	--	greater than 10 (T2)	ss(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Phosalone	Rasbora heteromorpha	BCFA and BSA	--	8.4 (T2)	ss,c,e,f, hard (HW) or soft (SW) synthetic dilution water or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Phosdrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.855 (91 percent K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al (1969), AMIC-5979
Phosdrin	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis,	FL and BSA	Belzoni, Miss	0.855 (54 percent K2)	--	same as above	Naqvi, et al (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)						
Phosdrin	Tubifex tubifex	FL and BSA	Bolzoni, Miss.	1.0 (NTE)	—	same as above	Naqvi, et al (1969), AMIC-5979
Phosphamidon	Fish (not specified)	—	—	greater than 1.0-10.0 (K)	—	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas(1971) AMIC-1856
Phosphamidon	Labeo rohita (fry)	BSA	—	137.7 (T7)	a,c,d,e,f	DDVP and Phosphamidon were shown to be selective toxicants that can be used for eradication of undesirable animals from ponds without injuring carp. DDVP seemed superior since less was needed, it was not influenced by turbidity, and it detoxified more rapidly than phosphamidon.	Konar (1969),AMIC-5453
Phosphamidon	Labeo rohita (fingerling)	BSA	—	177.0-285.2 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453
Phosphamidon	Trichogaster fasciatus	BSA	—	30.2 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453
Phosphamidon	Channa punctatus (fry)	BSA	—	19.1 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Channa punctatus (fingerling)	BSA	—	25.1 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453
Phosphamidon	Channa punctatus (adult)	BSA	—	36.3 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Mastocembelus pancalus	BSA	—	28.4 (T7)	a,c,d,e,f	same as above	Konar (1959),AMIC-5453
Phosphamidon	Macrognathus aculeatum	BSA	—	41.7 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Nandus nandus	BSA	—	34.7 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453

Phosphamidon	Amphipneus cuchia (young)	BSA	—	11.2 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Amphipneus cuchia (adult)	BSA	—	22.4 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Mystus vitatus	BSA	—	82.2 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Puntius sophore	BSA	—	289.9 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Anabas testudineus	BSA	—	68.4 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Heteropneustes fossilis (fry)	BSA	—	66.8 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Heteropneustes fossilis (fingerling)	BSA	—	66.1 (T7)	a,c,d,e,f	same as above	Konar(1969), AMIC-5453
Phosphamidon	Esomus danrica (fry)	BSA	—	178.2 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Dytiscus sp. (adult)	BSA	—	1.3 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Sphaerodema annulatum	BSA	—	2.6 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Ranatra filiformis	BSA	—	2.9 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Anisoptera (nymphs)	BSA	—	1.5 (T7)	a,c,d,e,f	same as above	Konar (1969),AMIC-5453
Phosphamidon	Cybister sp.	BSA	—	2.3 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Nepa sp.	BSA	—	2.4 (T7)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Belostoma indica	BSA	—	6.3 (T7)	a,c,d,e,f	same as above	Konar (1969),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Phosphamidon	Hydroschius sp.	BSA	--	9.6 (T?)	a,c,d,e,f	same as above	AMIC-5453
Phosphamidon	Volvox	BSA	--	5.8 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Pandorina	BSA	--	5.8 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Closterium	BSA	--	5.8 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Brachionus	BSA	--	58 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Gastrotricha	BSA	--	18 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Cyclops	BSA	--	18 (NTE)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Cyclops	BSA	--	2.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Nauplius	BSA	--	2.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Daphnia	BSA	--	2.5 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453
Phosphamidon	Ceriodaphnia	BSA	--	4.8 (K)	a,c,d,e,f	same as above	Konar (1969), AMIC-5453

Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6320 (dorsal muscle RESIDUE)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	7550 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	6440 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	6780 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	23,620 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	23,920 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus (gravid females)	FM	CatalinaIsla nd, Cal.	18,550(gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	9680 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	7270 (liver residue)	--	same as above	Stapleton (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2530 (integument residue)	--	same as above	AMIC-5988 Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	2520 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	5800 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	5550 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	7800 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Phosphorus	Paralabrax clathratus	FM	Catalina Island, Cal.	18,450 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Phostex	Crangon crangon	BSA	--	greater than 18 (TZ)	as(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Photoaldrin	Anacystis nidulans	L	--	1.8 (growth inhibited)	a°,c°,r SH	Metabolic products of Aldrin, Dieldrin, and Endrin can be as toxic as the parent compounds, as shown by OD measurement.	Batterton, et al (1971), AMIC-1471
Photoaldrin	Agmenellum quadruplicatum	L	--	MTE	a°,c°,r SH	same as above	Batterton, et al (1971), AMIC-

							1471
Photodieldrin	Aqasnellus quadruolicatu m	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SW	same as above	Batterton, et al (1971), AMIC-1471
Photodieldrin	Anacystis nidulans	L	--	0.5-1.0 (growth inhibited)	a*,c*,r SW	same as above	Batterton, et al (1971), AMIC-1471
Phygon	Mercenaria mercenaria (eggs)	L	--	0.84 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Phygon	Mercenaria mercenaria (larvae)	L	--	1.75 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
Phygon	Crassostrea virginica (eggs)	L	--	0.814 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
Phygon	Crassostrea virginica (larvae)	L	--	0.841 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
Picloram (K salt)	Rasbora heteromorpha	BCFA and BSA	--	11 (T2)	a*,c,e,f, hard (HW) orsoft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
PMA	Salmo gairdneri	L	--	2.8 (S838)	s,e,f (1 hr exposure daily for up to 11 days)	Single exposures of fish to organomercury compounds resulted in peak concentrations of mercury as follows: gills, 3 hrs blood, 32 hrs liver, 7 days kidney 21 For repeated one hr (daily) exposures peak concentrations were: blood, 18 days liver, 18 days kidney, 61 days muscle, 7 days. The concentration of mercury was always lowest in muscle tissue. Feeding experiments with PMA showed mercury could be passed from fingerlings to larger fish. The authors conclude that either legal size or fingerling hatchery fish treated with organomercurials could be a public health hazard.	Rucker, et al (1969), AMIC-6733
Polycell product	Crangon crangon	BSA	--	330-1000 (T4)	ss(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Polyclens	Carcinus maenas	BSA	--	10-33 (T2)	ss(continuous, aeration, sea water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Polyclens	Cardium edule	BSA	--	33-100 (T2)	ss(continuous aeration, seawater, and daily solution	same as above	Portmann, et al (1971), AMIC-7701

					renewal)		
Polyclens	Crangon crangon	BSA	--	18-33 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Polyclens	Pandalus montagui	BSA	--	18 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Polycomplex A-11	Steelhead trout (fingerlings)	BSA	--	13.8 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
Polycomplex A-11	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	1.5 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Polycomplex A	Carcinus maenas	BSA	--	188-338 (T2)	as(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Polycomplex A	Cardium edule	BSA	--	33-188 (T2)	as(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					renewal)		
Polyoxyethylene A	Lisanda lisanda	BSA	--	33-188 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Polystic	Roccus saxatilis (fingerlings)	BSA	--	greater than 1,818 (T4)	a*,c,d,e,f,g and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Potassium chloride	Lepomis macrochirus	BSA, L	--	2,818 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Potassium chloride	Nitzschia linearis	BSA, L	--	1,337 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Potassium chloride	Physa heterostropha	BSA, L	--	948 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Potassium chromate (as Cr)	Lepomis macrochirus	BSA, L	--	168.8 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Potassium chromate (as Cr)	Nitzschia linearis	BSA, L	--	7.8(T5)	ae,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720

Potassium cyanide (as cyanide)	Carcinus maenas	BSA	—	greater than 5 (T2)	as(continuous, aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Potassium Cyanide (as cyanide)	Crangon crangon	BSA	—	greaterthan 25 (T2)	as(continuous, aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Potassium cyanide (as cyanide)	Pandalus montagui	BSA	—	0.25 (T2)	as(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Potassium cyanide	Lebistes reticulatus (1 mo, 1.1 ca)	BCF	—	0.26 (T2)	a,c,d,e,f, n,q, phosphates, carbonates, bicarbonates, sulfates, and conductance	Toxicity thresholds and a dilution mixture threshold were calculated from fish bioassay data for zinc chloride and potassium cyanide. Threshold concentrations for zinc and cyanide were found to be 0.33 and 0.236 mg/l, respectively. A procedure for determining toxicity threshold concentrations for mixtures of chemicals was also presented. A zinc-cyanide dilution ratio for toxicity threshold (THDR) was found to be a linear function of the concentration of the two ions taken separately, and therefore THDR equals 1.26-0.86CN-1.22Zn. Based on a multicomponent equation, mixtures of zinc and cyanide exhibit an antagonistic effect. This appears to be a significant advance in an approach to estimating safe concentrations for water pollutants.	Chen, et al (1969), AMIC-3831
Potassium cyanide	Lebistes reticulatus (1 mo, 1.1 ca)	BCF	—	0.42 (T1)	a,c,d,e,f, n,q, phosphates,	same as above	Chen, et al (1969), AMIC-3831

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					carbonates, bicarbonates, sulfates, and conductance		
Potassium dichromate (as Cr)	Lepomis [illegible]rochirus	BSA, L	--	113 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 18-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5728
Potassium dichromate (as Cr)	Nitzschia linearis	BSA, L	--	8.21 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5728
Potassium dichromate (as Cr)	Physa heterostropha	BSA, L	--	17.3 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5728
Potassium dichromate (as Cr)	Phormidium ambiguum	L	--	8.5-18.8 (16 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1978), AMIC-892
Potassium dichromate	Brachydanio	BSA	--	96-79 (384)	a,e, and	Feeding behavior was affected by	Cairns, et

	rerio				synthetic dilution water	zinc, chromium, and ABS in that more time was required for consuming measured amounts of food. Feeding response was also affected by aeration, feeding schedule, light intensity, and outside disturbances. The authors note that much more work is needed to establish the reliability of this procedure.	et al (1967), AMIC-5787
Potassium pentachlorophenate	Oncorhynchus kisutch (CSE 119 embryo cells)	L	--	48-120 (5818)	a[e]	Growth of cultured coho salmon embryo cells on Eagle"s MEM was partially inhibited at 40 ppm, strongly inhibited at 80 ppm, and totally inhibited at 210 ppm. The 50 percent inhibitory dose was estimated to be 66 ppm. A linear relationship between dose and effect was noted. Data on cell counts, population volume, dry weight, ash, nitrogen, organic acids, and organic matter are reported.	Hanes, et al (1970), AMIC-3753
Potassium permanganate	Trachinotus carolinus (juvenile)	BSA	--	1.6-2.9 (T4)	a,c,e,f,i, and sulfate, sodium, calcium, potassium, magnesium, carbonate, bicarbonate, salinity	In this study of pompano salinity was controlled at 10, 20, and 30 ppt and investigated as a variable. Acriflavin, formalin, and potassium permanganate were slightly more toxic at the highest salinity, while copper sulfate was slightly less toxic. These compounds are used as prophylactic bacterial treatments. All appeared to be reasonably safe to use except possibly potassium permanganate.	Birdsong, et al (1971), AMIC-5570
Potassium permanganate	Roccus saxatilis (fingerlings)	BSA	--	2.5 (T4)	a[e],c,d,e,f ,D and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
Potassium permanganate	Phormidium ambiguum	L	--	8.5-10.8 (16 percent growth inhibited14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (8.85 and 0.885 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental	Otte (1970), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						management. No practical environmental means were found.	
Potassium salt of 2(4-chlorotolyl) oxy-N-methoxy-acetamide	Phormidium ambiguum	L	--	0.5-10.0 (16 percent growth inhibited 14)	--	same as above	Otto (1970), AMIC-892
Potassium salt of 2,3,5-trichloro-4-pyridinol	Phormidium ambiguum	L	--	0.5-10.0(NTE)	--	same as above	Otto (1970), AMIC-892
Procaine hydrochloride	Negaprion brevirostris (1-3 kg)	BSA	--	10 (NTE 1 hr)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
Propanil	Gamarus fasciatus	BSA	--	16.0 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Prophas	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971), AMIC-1856
Protim	Rasbora heteromorpha	BCFA and BSA	--	10.0 (T2, hardwater)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes	Alabaster (1969), AMIC-5425

					species	pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Prolin	Rasbora heteromorpha	BCFA and BSA	--	1.8 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-9429
Pro-Noxfish	Oncorhynchus tshawytscha (fry)	BSA	--	1.8 (S8)	--	Salmonid egg embryos may be able to survive rotenone treatment that kills fish. Toxicity to the coho embryos was greater at 53 F than at 39 and 46 F. Eggs buried in gravel survived better than those at the gravel surface. Further field evaluations were recommended.	Garrison (1968), AMIC-5714
Pro-Noxfish	Oncorhynchus kisutch (fry)	BSA	--	0.125 (T1)	--	same as above	Garrison (1968), AMIC-5714
Pro-Noxfish	Oncorhynchus kisutch (eggs)	BSA	--	1.7 (T1)	--	same as above	Garrison (1968), AMIC-5714
PVP-Iodine	Mercenaria mercenaria (eggs)	L	--	17.1 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
PVP-Iodine	Mercenaria mercenaria (larvae)	L	--	34.9 (T12)	--	same as above	Davis, et al (1969), AMIC-5998

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Pyrasin	Rasbora heteromorpha	BCFA and BSA	--	28 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-5425
Pyrazon	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas(1971) ANIC-1056
Pyrimithate	Rasbora heteromorpha	BCFA and BSA	--	4.1 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-5425
Quinaldine	Negaprion brevirostris (1-3 kg)	BSA	--	8.2 (SB 18 MIN)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), ANIC-3832
Raymar Sol B	Crangon	BSA	--	3.3-10 (T2)	ae(contin-	One hundred-forty surface active	Portmann, et

		oregon				uous aeration, seawater, and daily solution renewal)	agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	al (1971), AMIC-7781
	RD 14639	Rasbora heteromorpha	BCFA and BSA	--	0.58 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969),AMIC-5425
	Regione	Rasbora heteromorpha	BCFA and BSA	--	37 (T2, softwater)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
	Regione	Salmo gairdneri	BCFA and BSA	--	78 (T2, hardwater)	a*,c,e,f, hard (HW) or soft (SW)synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
	Regione	Salmo gairdneri	BCFA and BSA	--	27 (T2, softwater)	a*,c,e,f, hard (HW) or SOFT(SW)	same as above	Alabaster (1969), AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					synthetic dilution water, or seawater for some species		
Rhodamine B	Salmo gairdneri	BSA	--	217 (T4)	a*	The dyes Rhodamine B and Fluorescein sodium were found to be relatively non-toxic in ppm concentrations while antimycin was toxic at ppb levels. The author states that neither dye at field use concentrations should significantly influence the activity of Antimycin A against fish.	Marking (1969), AMIC-5729
Rhodamine B	Ictalurus punctatus	BSA	--	526 (T4)	a*	same as above	Marking (1969), AMIC-5729
Rhodamine B	Lepomis macrochirus	BSA	--	379 (T4)	a*	same as above	Marking (1969), AMIC-5729
Ridzlik	Crangon crangon	BSA	--	330-1888 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Roccal	Mercenaria mercenaria (eggs)	L	--	0.19 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that	Davis, et al (1969), AMIC-5998

						would not have serious effect on shellfish.	
Reccal	Mercenaria mercenaria (larvae)	L	--	8.14 (T12)	--	same as above	Davis, et al (1969),AMIC-5990
Rois OSD	Crangon crangon	BSA	--	3.3-10 (T4)	aa(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971),AMIC-7701
Rosin amine diacetate	Phormidium ambiguum	L	--	8.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of rat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
Rosin Amine D	Crassostrea virginica (eggs)	L	--	less than 0.25 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, etal (1969), AMIC-5990
Rosin Amine D	Crassostrea virginica	L	--	less than0.025 (T14)	--	same as above	Davis,et al (1969),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	(larvae)						AMIC-5998
Rotenone	Salmo gairdneri	L	--	0.057 (T4)	a*	The piscicides Antimycin A and Rotenone were found to be compatible when mixed and furthermore appeared to have an additive effect in combination. That is both compounds were more toxic in the presence of the other than alone.	Howland (1969), AMIC-5725
Rotenone	Lepomis macrochirus	L	--	0.114 (T4)	a*	same as above	Howland (1969), AMIC-5725
Re-moot	Gammarus fasciatus	BSA	--	2.6 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
R-1910	Gammarus fasciatus	BSA	--	15.0 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Salicylic acid (2-hydroxybenzoic acid)	Phormidium ambiguum	L	--	8.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental	Otto (1970), AMIC-892

						seens were found.	
Seaweed	Steelhead trout (fingerlings)	BSA	--	28.2 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
Seaweed	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	1.5 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Sefell	Agonus cataphractus	BSA	--	1888-3388 (T2)	aa(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Sefell	Crangon crangon	BSA	--	1888-3388 (T2)	aa(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Selenium dioxide	Carassius auratus	L	--	12 (T7)	a,c	In addition to toxicity data, conditioned avoidance response was studied at sublethal concentrations. The lowest concentration of metal resulting in significant impairment was: arsenic, 0.18; lead, 0.07; mercury, 0.003; and selenium, 0.25. Deleterious effects occurred at metal concentrations approximately similar to potable water standards.	Weir, et al (1970), AMIC-739
Selenium	Coregonus clupeaformis	FL	Moose Lake, Can.	0.2 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both	Uthe, etal (1971), AMIC-3819

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						areas.	
Selenium	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.4 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Selenium	Esox lucius	FL	Moose Lake, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Selenium	Esox lucius	FL	Lake St. Pierre, Can.	0.4 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Selenium	Esox lucius	FL	Lake Erie, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Selenium	Osmerus mordax	FL	Lake Erie, Can.	0.2 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Selenium	Perca flavescens	FL	Lake Erie, Can.	0.3 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Sesanex	Notemigonus chrysoleucas	L	--	2 (MTE 1)	--	Fish brain AChE activity was not affected by Sesanex alone but was significantly inhibited by parathion. Pretreatment with Sesanex at 2 ppm resulted in decreased inhibition of AChe activity by parathion.	Gibson, et al (1971), ANI 3799
Sesanex	Lepomis cyanellus	L	--	2 (MTE 1)	--	same as above	Gibson, et al (1971), AMIC-3799
Sesanex	Lepomis macrochirus	L	--	2 (MTE 1)	--	same as above	Gibson, et al (1971), AMIC-3799
Sevin	Puntius ticto	--	--	3.7 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Kiefos followed in decreasing order by Sumithion, Malathion, Fenithion, Dimecron, Sevin, and BHC. The author cites the need for more selective	Bhatia (1971), AMIC-5423

						pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	
	Sevin	Rasbora heteromorpha	SCFA and BSA	—	2.4 (T2)	s*,c,o,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-5425
	Sevin	Palaemonetes kadiakensis (resistant)	BSA	—	0.864-0.272 (T1)	s*	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; least toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1978), ANIC-5519
	Sevin	Palaemonetes kadiakensis (non-resistant)	BSA	—	0.0425 (T1)	s*	same as above	Naqvi, et al (1978), ANIC-5519
	Sevin	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.58 (NTE)	—	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al(1969), ANIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Sevin	Mercenaria mercenaria (eggs)	L	--	3.82 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Sevin	Mercenaria mercenaria (larvae)	L	--	greater than 2.5 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
Sevin	Crassostrea virginica (eggs)	L	--	3 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
Sevin	Crassostrea virginica (larvae)	L	--	3 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
Sevin	Wolffia papulifera	L	--	1000 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
Shmoosh R1885	Crangon crangon	BSA	--	3.3-10 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Shmoosh R1885	Pandalus montagui	BSA	--	1.8-3.3 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781

Shell D-58	Salmo gairdneri	BCFA and BSA	--	185 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Silver methane-arsonate	Phormidium ambiguum	L	--	8.5-10.8 (16 percent growth inhibited14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
Silver	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	0 (ventral muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Silver	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	0.86 (heart residue)	--	same as above	Stapleton (1968), AMIC-5950
Silver	Paralabrax clathratus	FN	Catalina Island, Cal.	0.16 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	0.81 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FN	Catalina Island, Cal.	0.82 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FN	Catalina Island, Cal.	0.89 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	0 (gonad residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FN	Catalina Island, Cal.	0.42 (gonad residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus (gravid females)	FN	Catalina Island, Cal.	0.12gonad residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	0 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FN	Catalina Island, Cal.	0.82 (liver residue)	--	same as above	Stapleton (1968), AMIC-5980

Silver	Paralabrax clathratus	FW	Scattergood Steam Plant, Los Angeles, Cal.	0.22 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Silver	Paralabrax clathratus	FW	Catalina Island, Cal.	0.12 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Silvex (BEE)	Gammarus fasciatus	BSA	--	0.74 (T2), 0.25 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Silvex (BEE)	Palaemonetes kadiakensis	BSA	--	8.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (BEE)	Asellus brevicaudus	BSA	--	48.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (BEE)	Orconectes nais	BSA	--	68.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (BEE)	Daphnia magna	BSA	--	2.1 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (BEE)	Cypridopsis vidua	BSA	--	4.9 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (BEE)	Lepomis macrochirus	BSA	--	78.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (PGBE)	Gammarus fasciatus	BSA	--	1.0 (T2), 0.84 (T4)	a*	same as above	Sanders (1970), AMIC-453
Silvex (PGBE)	Palaemonetes kadiakensis	BSA	--	3.2 (T2)	a*	same as above	Sanders (1970), AMIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Silvex (PGBE)	Asellus brevicaudus	BSA	--	0.5 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (PGBE)	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (PGBE)	Daphnia magna	BSA	--	0.18 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (PGBE)	Cypridopsis vidua	BSA	--	0.20 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex (PGBE)	Lepomis macrochirus	BSA	--	16.6 (T2)	a*	same as above	Sanders (1970), AMIC-453
Silvex	Crassostrea virginica (eggs)	L	--	5.9 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5990
Silvex	Crassostrea virginica (larvae)	L	--	0.7 (T14)	--	same as above	Davis, et al (1969), AMIC-5990
Simazine	Fish (not specified)	--	--	greater than 10-100 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mawdesley-Thomas (1971), AMIC-1856
Simazine	Salmo	BCFA	--	43 (T2)	a*,c,e,f,	One hundred sixty-four	Alabaster

		gairdneri	and BSA			hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	(1969), AMIC-5429
	Simazine	Salmo gairdneri	BCFA and BSA	--	44 (T1)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5429
	Simazine	Roccus saxatilis (fingerlings)	BSA	--	8.25 (T4)	a*,c,d,e,f ,g and iron	Striped bass fingerlings were apparently much more sensitive to therapeutic and herbicidal compounds than many freshwater fish.	Wellborn (1969), AMIC-5723
	Simazine	Carcinus maenas	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
	Simazine	Cardium edule	BSA	--	greater than 100 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Simazine	Crangon crangon	BSA	--	greater than 100 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Simazine	Gammarus fasciatus	BSA	--	greater than 100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Simazine	Palaemonetes kadiakensis	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Simazine	Asellus brevicaudus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Simazine	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Simazine	Daphnia magna	BSA	--	1.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Simazine	Cypridopsis vidua	BSA	--	3.2 (T2)	a*	same as above	Sanders (1970), AMIC-453
Simazine	Lepomis macrochirus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), AMIC-453
Stickgone 1	Carcinus maenas	BSA	--	33-100 (T2)	as(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Stickgone 1	Cardium edule	BSA	--	33 (T2)	as(contin-	same as above	Portmann, et

						uous, aeration, sea water, and daily solution renewal)		al (1971), AMIC-7701
	Slickgone 1	Crangon crangon	BSA	--	3.3-18 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Slickgone 1	Pandalus montagui	BSA	--	3.3-18 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Slickgone 2	Carcinus maenas	BSA	--	18-33 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Slickgone 2	Cardius edule	BSA	--	3.3 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Slickgone 2	Crangon crangon	BSA	--	3.3-18 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

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Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					renewal)		
Silicogene 2	Pandalus montagui	BSA	--	3.3-18 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Silx	Rasbora heteromorpha	BCFA and BSA	--	6.3 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5625
Silx	Carcinus maenas	BSA	--	15 (T4)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Silx	Cardium edule	BSA	--	33 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Silx	Crangon crangon	BSA	--	180-330 (T2)	ae(continuous, aeration, seawater, and daily	same as above	Portmann, et al (1971), AMIC-7781

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					solution renewal)		
Silx	Ostrea edulis	BSA	--	188 (T2)	as(continuous, aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7701
Silx	Pandalus montagui	BSA	--	18-33 (T2)	as(continuous aeration, sea-water, and daily solution renewal)	same as above	Portmann, et al (1971), ANIC-7701
Snowcrift SC98	Crangon crangon	BSA	--	338-1888 (T2)	as(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), ANIC-7701
Sodium arsenate	Cerastium suratus	L	--	32 (T7)	s.c	In addition to toxicity data, conditioned avoidance response was studied at sublethal concentrations. The lowest concentration of metal resulting in significant impairment was arsenic, 0.18; lead, 0.07; mercury, 0.003; and selenium, 0.25. Deleterious effects occurred at metal concentrations approximately similar to potable water standards.	Weir, et al (1970), ANIC-739
Sodium bicarbonate	Lepomis macrochirus	BSA, L	--	8,688 (T4)	s*,s, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least	Patrick, et al (1968), ANIC-6720

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Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						three components of the food web.	
Sodium bicarbonate	Nitzschia linearis	BSA, L	--	650 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Sodium carbonate	Lepomis macrochirus	BSA, L	--	320 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Sodium carbonate	Nitzschia linearis	BSA, L	--	242 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Sodium chlorate	Rasbora heteromorpha	BCFA and BSA	--	8600 (T1)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Sodium chloride	Lepomis macrochirus	BSA, L	--	12,946 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Sodium chloride	Nitzschia linearis	BSA, L	--	2,430 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Sodium chloride	Agonus	BSA	--	22,000-33,000	am(contin-	One hundred-forty surface active	Portmann,et

		catashractus			(T2)	uous aeration, seawater, and daily solution renewal)	agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	al (1971), AMIC-7701
	Sodium chloride	Carcinus maenas	BSA	--	11,000-16,500 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Sodium chloride	Cardium edule	BSA	--	66,000 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
	Sodium chloride	Crangon crangon	BSA	--	16,500-33,000 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al(1971), AMIC-7701
	Sodium cyanide	Negaprion brevirostris (1-3 kg)	BSA	--	6.6 (5810 min)	a,c,e	Data from study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
	Sodium fluoroacetate	Salmo gairdneri	BCFA and BSA	--	588 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy	Alabaster (1969),AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					seawater for some species	predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Sodium fluoride	Crangon crangon	BSA	--	greater than 300 (T2)	as(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Sodium hydroxide	Aganus cataphractus	BSA	--	33-100 (T2)	as(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium hydroxide	Cardium edule	BSA	--	330-1000 (T2)	as(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium hydroxide	Crangon crangon	BSA	--	33-100 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium molybdate	Salmo gairdneri	FL	Castle Lake, Cal.	3.5 lb per A (NTE)	--	Molybdenum fertilization resulted in greater standing crops of zooplankton	Cardone, et al (1970).

						and bottom fauna and apparently in increased yields of rainbow and eastern brook trout. Mitigating factors may have influenced the results. A second experimental fertilization was initiated.	AMIC-5758
Sodium molybdate	Salvelinus fontinalis	FL	Castle Lake, Cal.	3.5 lb per A (NTE)	--	same as above	Cardone, et al (1979), AMIC-5758
Sodium nitrite	Rasbora heteromorpha	BCFA and BSA	--	218 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Sodium N-methyldithio carbamate	Phormidium ambiguum	L	--	0.5-10.0(NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1970), AMIC-892
Sodium pentachlorophenate	Salmo gairdneri	BCFA and BSA	--	8.15 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true.	Alabaster (1969),AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						Testing the actual material as sold was found to be essential.	
Sodium pentachlorophenate	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
Sodium pyridine-N-oxide	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	same as above	Otto (1978), AMIC-892
Sodium sulfate	Lepomis macrochirus	BSA, L	--	13,500 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Sodium sulfate	Nitzschia linearis	BSA, L	--	1,900 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Sodium thiocyanate	Carcinus maenas	BSA	--	greater than 500 (T2)	aa(continuous, aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701

Sodium thiocyanate	Cardium edule	BSA	--	greater than 500 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium thiocyanate	Crangon crangon	BSA	--	greater than 500 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Sodium thiocyanate	Pandalus montagui	BSA	--	greater than 6.2 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Spill-X	Steelhead trout (fingerlings)	BSA	--	35.9 (T4)	--	Evaluation of 11 oil dispersants resulted in a ranking for each and a recommendation for use according to the ranking. Ranking was based on toxicity and oil dispersal effectiveness. Corexit 7764 appeared to have the least toxicity with fair to good oil dispersion capability.	Tracy, et al (1969), AMIC-3834
Spill-X	Coho salmon (fingerlings)	BSA in situ	Hood Canal, Hoodsport, Wash.	1.5 (K)	--	same as above	Tracy, et al (1969), AMIC-3834
Spill remover	Pimephales promelas	BSA	--	5.6 (T4)	c,d,e,f	Toxicity of six oil spill dispersants was determined along with BOD values. Pond water was used as diluent and oil was included in the experiment. Oil markedly reduced toxicity of all dispersants. Data are given as "most probable" 96-hr TL sub m.	Zillich (1969), AMIC-2989
Spill remover	Pimephales promelas	BSA	--	1.4 (MSC)	c,d,e,f	same as above	Zillich (1969), AMIC-2989
Spill remover	Biochemical oxygen demand	L	--	630,000	c,d,e,f	same as above	Zillich (1969), AMIC-

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Streptomycin sulfate	Limnodrilus sp	L	—	0.5 (TI)	a°	Tubificid worms were found to be approximately 300 times more sensitive than their own gut microflora. The authors recommend that streptomycin should not be indiscriminately applied in aquatic ecosystems.	2989 Coler,et al (1968), AMIC-9468
Streptomycin sulfate	Tubifex sp	L	—	0.5 (TI)	a°	same as above	Coler, et al (1968),AMIC-9468
Streptomycin sulfate	Peloscolex sp	L	—	0.5 (TI)	a°	same as above	Coler, et al (1968),AMIC-9468
Streptomycin sulfate	Phormidium ambiguum	L	—	0.5-10.0 (MTE)	—	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto(1978), AMIC-892
Strobane	Lepomis cyanellus (Resistant)	BSA	—	0.68 (T2)	a°	Green sunfish from Belzoni, Miss. were resistant to Chlordane, Heptachlor, Lindane, and Strobane, but not to Parathion. Golden shiners from the same location were resistant to Lindane and Strobane, tolerant to Chlordane and Heptachlor, and susceptible to Parathion. Lack of resistance to Parathion indicated lack of agricultural usage of organophosphates in that area. Resistant	Hinchew, et al (1978), AMIC-5471

						fish were compared to susceptible ones collected at Starkville.	
Strobane	Lepomis cyanellus (Susceptible)	BSA	--	0.05 (T2)	a°	same as above	Minchew, etal (1978), AMIC-5471
Strobane	Notemigonus crysoleucas (Resistant)	BSA	--	2.22 (T2)	a°	same as above	Minchew, etal (1978), AMIC-5471
Strobane	Notemigonus crysoleucas (Susceptible)	BSA	--	0.06 (T2)	a°	same as above	Minchew, etal (1978), AMIC-5471
Strobane	Palaemonetes kadiakensis (resistant)	BSA	--	0.0894-0.207 (T1)	a°	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion: medium toxicity, Guthion, Lindane, Toxaphene, Strobane: lease toxic Chlordane, Sevin, and Heptachlor.	Naqvi, et al (1978), AMIC-5519
Strobane	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0393(T1)	a°	same as above	Naqvi, et al (1978), AMIC-5519
Strobane	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	State College, Miss.	0.10 (K2)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of	Naqvi, et al (1969), AMIC-5979

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						pesticide residues available to animals of higher trophic levels.	
Strobane	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis, Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.18 (K2)	--	same as above	Naqvi, et al (1969), AMIC-5979
Strobane	Tubifex tubifex	FL and BSA	Belzoni, Miss.	1.58 (NTE)	--	same as above	Naqvi, et al (1969), AMIC-5979
Strontium	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles, Cal.	2.2 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FH	Catalina Island, Cal.	1.7 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FH	Scattergood Steam Plant, Los Angeles,	3.3 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988

			Cal.				
Strontium	Paralabrax clathratus	FN	Catalina Island, Cal.	1.8 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FN	Catalina Island, Cal.	3.4 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus (gravid females)	FN	Catalina Island, Cal.	3.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	1.1 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FN	Catalina Island, Cal.	2.1 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	5.4 (integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FN	Catalina Island, Cal.	18.1(integument residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	2.3 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FN	Catalina Island, Cal.	3.7 (heart residue)	--	same as above	Stapleton (1968), AMIC-5988
Strontium	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	92 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Strontium	Paralabrax clathratus	FM	Catalina Island, Cal.	162 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5988
Strychnine nitrate	Heterodontus brevirostris (1-3 kg)	BSA	--	1.7 (SB 18 MIN)	a,c,e	Data from study of drug effects on young Lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter timed for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
Sulfisoxazole (Gantrisin)	Fundulus heteroclitus (3 in.)	L	--	8.96 (SB30)	a*,q	The sulfa drug caused no significant difference in growth rate, testes weight, iodine uptake, or liver weight. Varying degrees of adrenal inactivity and adrenal degranulation occurred due to treatment. A significant increase in hematocrit was noted. As a result this chemical has become the sulfa drug of choice in the Ringhan Laboratory for controlling skin infection of killifish.	Comeaudon, et al (1969), AMIC-5736
Sulfuric acid	Agonus cataphractus	BSA	--	60-90 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Sulfuric acid	Carcinus maenas	BSA	--	70-88 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781
Sulfuric acid	Cardium edule	BSA	--	200-500 (T2)	ae(contin-	same as above	Portmann, et

					uous aeration, seawater, and daily solution renewal)		al (1971). AMIC-7701
Sulfuric acid	Crangon crangon	BSA	--	78-88 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7701
Sulfuric acid	Pandalus montaqui	BSA	--	42.5 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7701
Sulfuric acid	Platichthys flesus	BSA	--	188-338 (T2)	as(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971). AMIC-7701
Sulfur	Fish (not specified)	--	--	greater than 1000 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Mandeslev-Thomas (1971), AMIC-1056
Sulset (tinted)	Mercenaria mercenaria (eggs)	L	--	greater than 100 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of	Davis, et al (1969). AMIC-5998

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						selecting chemicals for pest control that would not have serious effect on shellfish.	
Sulfat (tinted)	Mercenaria mercenaria (larvae)	L	--	greaterthan 100 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
Sulfat (untinted)	Mercenaria mercenaria (eggs)	L	--	greaterthan 1000 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
Sulfat (untinted)	Mercenaria mercenaria (larvae)	L	--	greater than 1000 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
Sulfat (untinted)	Crassostrea virginica (eggs)	L	--	greaterthan 600 (T2)	--	same as above	Davis, et al (1969), AMIC-5998
Sulfat (untinted)	Crassostrea virginica (larvae)	L	--	greater than 600 (T14)	--	same as above	Davis, et al (1969), AMIC-5998
Sumithion	Puntius ficto	--	--	0.0056 (T4)	a,c,d,e,f	Of the pesticides investigated, the most toxic was Kiotos followed in decreasing order by Sumithion, Malathion, Formithion, Dimecron, Sevin, and BHC. The author cites the need for more selective pesticides nontoxic to fish or antagonistic agents for reducing fish toxicity.	Bhatia (1971), AMIC-5423
Sutan	Gammarus fasciatus	BSA	--	18.8 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustaces were effected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
S.D. 3962	Rasbora heteromorpha	BCFA and BSA	--	greater than 1,000 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes	Alabaster (1969), AMIC-5425

						species	pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
	S.D. 8211	Rasbora heteromorpha	BCFA and BSA	--	3.6 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-9425
	S.D. 8447	Rasbora heteromorpha	BCFA and BSA	--	4.3 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-9425
	S.N. 9215	Rasbora heteromorpha	BCFA and BSA	--	23 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-9425
	TCC	Mercenaria mercenaria (eggs)	L	--	0.032 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of	Davis, et al (1969), AMIC-9990

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						selecting chemicals for pest control that would not have serious effect on shellfish.	
TCC	Mercenaria mercenaria (larvae)	L	--	0.037 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
TCP	Crassostrea virginica (eggs)	L	--	0.6 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
TCP	Crassostrea virginica (larvae)	L	--	greater than 1.0 (T14)	--	same as above	Davis, et al(1969), AMIC-5998
TDE	Fish (not specified)	--	--	greater than 0.01-0.1 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Hawdesley-Thomas (1971), AMIC-1856
TDE	White sucker	FRL	Misc. states	0.09-3.81 residue (SB)	--	The Bureau of Sport Fisheries continued its fish monitoring program by collecting 147 composite fish samples from 58 nationwide monitoring stations during the fall of 1969. Fish were analyzed for residues of 11 organochlorine insecticides, lipids, and PCB"s.	Henderson, etal (1971), AMIC-1487
TDE	Yellow perch	FRL	Misc. states	0.03-1.47 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
TDE	Chain pickerel	FRL	Misc. states	0.09 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487

TDE	White catfish	FRL	Misc. states	0.32-0.43 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	White perch	FRL	Misc. states	0.65-0.87 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
TDE	Goldfish	FRL	Misc. states	1.91 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Pumpkinseed	FRL	Misc. states	0.39 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Largemouth bass	FRL	Misc. states	0.04-2.73 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Brown bullhead	FRL	Misc. states	0.07-1.76 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Carp	FRL	Misc. states	0.02-1.96 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Channel catfish	FRL	Misc. states	0.04-10.4 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Redhorse sucker	FRL	Misc. states	0.03-0.44 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Gizzard shad	FRL	Misc. states	0.37-0.73 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1407
TDE	Spotted sucker	FRL	Misc. states	0.19-0.32 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TDE	Bluegills	FRL	Misc. states	0.03-0.45 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TDE	Redbreast sunfish	FRL	Misc. states	0.02 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
TDE	Striped mullet	FRL	Misc. states	0.28-2.26 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
TDE	Blue catfish	FRL	Misc. states	0.88 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
TDE	Rock bass	FRL	Misc. states	0.85-0.99 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
TDE	Freshwater drum	FRL	Misc. states	0.28 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
TDE	Bloater	FRL	Misc. states	0.15-0.74 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
TDE	Lake whitefish	FRL	Misc. states	0.12 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
TDE	Lake trout	FRL	Misc. states	0.02-0.15 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1487
TDE	White crappie	FRL	Misc. states	0.22-0.27 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
TDE	Bigmouth buffalo	FRL	Misc. states	0.17-0.68 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
TDE	Smallmouth buffalo	FRL	Misc. states	0.46 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1487
TDE	Flathead catfish	FRL	Misc. states	0.88 residue (SB)	--	same as above	Henderson, etal (1971), AMIC-1487
TDE	Goldeye	FRL	Misc. states	0.02-0.28 residue (SB)	--	same as above	Henderson, et al(1971),

							AMIC-1407
TOE	Walleye	FRL	Misc. states	0.83-0.29 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TOE	Sauger	FRL	Misc. states	0.10 residue (SB)	--	same as above	Henderson,et al (1971),AMIC-1407
TOE	Flannelmouth sucker	FRL	Misc. states	0.28 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TOE	Black bullhead	FRL	Misc. states	0.02-0.05 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TOE	White bass	FRL	Misc. states	0.09 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TOE	Black crappie	FRL	Misc. states	0.22-0.49 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TOE	Largescale sucker	FRL	Misc. states	0.06-0.29 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TOE	Smallmouth bass	FRL	Misc. states	0.14-0.23 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TOE	Northern squawfish	FRL	Misc. states	0.03-0.45 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TOE	Chiselmouth	FRL	Misc. states	0.09-0.41 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TOE	Klamath sucker	FRL	Misc. states	0.01 residue (SB)	--	same as above	Henderson, et al(1971), AMIC-1407
TOE	Rainbow trout	FRL	Misc. states	0.03-0.16 residue (SB)	--	same as above	Henderson,et al (1971), AMIC-1407
TOE	Bridgelip	FRL	Misc. states	0.38 residue	--	same as above	Henderson,

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	sucker			(SB)			et al (1971), AMIC-1487
TDE	Arctic grayling	FRL	Misc. states	0.16 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
TDE	Round whitefish	FRL	Misc. states	0.32 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
TDE	Longnose sucker	FRL	Misc. states	0.01-0.52 residue (SB)	--	same as above	Henderson, et al (1971), AMIC-1487
TDE	Engraulis mordax	FN	Pacific Northwest Coast, Grays Harbor, Wash.	0.07-0.24 (residue)	--	Pesticides from the Columbia River into Puget Sound apparently contaminated fish constituting commercial catches in Pacific Northwest waters. Residues in these marine products were substantially lower than the FDA tolerance for beef (7 ppm). Fish from locations near the mouth of the Columbia River had higher pesticide content than ones caught farther away.	Stout (1968), AMIC-3784
TDE	Cancer magister	FN	Pacific Northwest Coast, Destruction Island, Wash.	0.01(residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Cancer magister	FN	Pacific Northwest Coast, Ilwaco, Wash.	0.02 (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Pareshrys vetulus	FN	Pacific Northwest Coast, Blaine, Wash.	0.01-0.07 (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Hartuccius productus	FN	Pacific Northwest Coast, Sarasota Passage, Wash.	0.03-0.05 (residue)	--	same as above	Stout (1968), AMIC-3784

TDE	Hariuccius productus	FH	Pacific Northwest Coast, Fort Susan, Wash.	0.03-0.09 (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Hariuccius productus	FH	Pacific Northwest Coast, Cape Foulweather, Ore.	0.07(residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Hariuccius productus (fishmeal)	FH	Pacific Northwest Coast, Aberdeen, Wash.	0.03 (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Sebastodes alutus	FH	Pacific Northwest Coast, Hecate Strait, B.C.	Trace (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Platichthys stellatus	FH	Pacific Northwest Coast, Blaine, Wash.	0.03(residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Gadus macrocephalus	FH	Pacific Northwest Coast, Blaine, Wash.	0.01 (residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Sebastodes flavidus	FH	Pacific Northwest Coast, Hecate Strait, B.C.	0.01(residue)	--	same as above	Stout (1968), AMIC-3784
TDE	Sebastodes flavidus	FH	Pacific Northwest Coast, Ilwaco, Wash.	0.02-0.09 (residue)	--	same as above	Stout (1968), AMIC-3784
TEPA	Poecilia reticulata	BCH	--	1-10 (SBI)	a,c,d	Guppies were continuously exposed for 24 hr each week over a 33 wk experimental period to determine the effect of TEPA on reproduction and on the viability, survival, and reproduction of	Stock, et al (1969), AMIC-5457

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						the unexposed F1 generation. Male fertility was adversely affected at concentration levels that did not influence female reproductive capability. Inhibited brood production was associated with atrophied and normal testes. The effect varied with concentration and exposure frequency. Male potency appeared to recover when exposures were discontinued. No apparent effects were observed in the F1 generation. TEPA is a chemosterilant used to induce sterility in insect pests.	
TEPA	Poecilia reticulata	BCH	--	198 (T4)	b,c,d	same as above	Stock, et al(1969), AMIC-9457
TEPP	Tubifex tubifex	FL and BSA	Belzoni, Miss.	8.88 (MTE)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	Naqvi, et al(1969), AMIC-9979
TEPP	Crassostrea virginica (eggs)	L	--	greater than 18.8 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that	Davis, et al(1969), AMIC-9998

						would not have serious effect on shellfish.	
TEPP	Crassostrea virginica (larvae)	L	--	greater than 10.8 (T14)	--	same as above	Davis, et al(1969), AMIC-5998
Terramycin (concentrate)	Morone saxatilis (fingerlings)	BSA	--	165 (T4)	a,c,d,e,f, p	All compounds were investigated because of their probable usage in hatchery production of white bass. Compounds that can be used at recommended concentrations were Aquathol, Casaron, Lindane, and Terramycin concentrate. Those that should not be used were Acriflavine, Bayluscide, Malachite green oxalate, and Malathion.	Wellborn (1971), AMIC-5571
Tetradifon	Cardium edule	BSA	--	greater than 10 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Tetradifon	Crangon crangon	BSA	--	greater than 10 (T2)	ae(continuous, aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Tetrahydrofurfuryl alcohol	Rasbora heteromorpha	BCFA and BSA	--	3,488 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
TFN	Petromyzon marinus	FLR	Marquette County,	3.8-9 (annual treatment,	a,f, conduc-	TFN, a selective lamprey larvicide, was applied annually over a	Manion (1969),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Michigan, Garlic River and SauxHead Lake	89-96 percent population reduction)	tivity	3-year period to the Garlic River which flows into Saux Head Lake. The final TFN treatment contained 1 percent Bayluscide as a synergist and "bottom toxicant". The two compounds in combination were considerably more effective than TFN alone. The author believed total effectiveness was not achieved because lampreys avoid lethal doses by moving to untreated water.	AMIC-3761
Thallium	Crangon crangon	BSA	--	18 (T4)	ae(continuous aeration, sea-water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Thimet	Rasbora heteromorpha	BCFA and BSA	--	less than 10 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Thioglycolic acid	Pimephales promelas	BSA	--	38.8 (T4)	a*,d,e,o, and Fe	Malathion and its hydrolysis products were evaluated with the finding that one such product (diethyl fumarate) was more toxic than Malathion to fathead minnows. Synergism occurred between Malathion and two products of hydrolysis. Continuous exposure resulted in increased toxicity.	Bender(1969), AMIC-3787
Thiotutin	Phormidium ambiguum	L	--	8.9-18.8 (100 percent growth	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than	Otto (1978), AMIC-892

				inhibited 14)		CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
Thiumet	Rasbora heteromorpha	BCFA and BSA	—	12 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Thorium	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.006(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1978), AMIC-3778
Thorium	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	0.003(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Thorium	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	0.004(residue)	--	same as above	Lucas, et al (1978), AMIC-3778

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Thorium	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.0021(residual)	--	same as above	Lucas, et al (1978), ANIC-3778
Thorium	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	0.0009(residual)	--	same as above	Lucas, et al (1978), ANIC-3778
Thorium	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	0.004(residual)	--	same as above	Lucas, et al (1978), ANIC-3778
Thorium	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	2(residual)	--	same as above	Lucas, et al (1978), ANIC-3778
Thorium	Coregonus artedi	FL	Great Lakes - Superior, Michigan, and Erie	93(residual)	--	same as above	Lucas, et al (1978), ANIC-3778
Thorium	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	0.0009(residual)	--	same as above	Lucas, et al (1978), ANIC-3778
Thorium	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	0.0024(residual)	--	same as above	Lucas, et al (1978), ANIC-3778
Thorium	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	0.003(residual)	--	same as above	Lucas, et al (1978), ANIC-3778
Thorium	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	0.003(residual)	--	same as above	Lucas, et al (1978), ANIC-3778
Thorium	Stizostedion	FL	Great Lakes	0.002(residual)	--	same as above	Lucas, et al

	vitreum vitreum		- Superior, Michigan, and Erie				(1978), AMIC-3778
Thyroxine	Gadus morhua	L	—	0.000001 (SB6)	—	Line-caught juvenile cod held in small tanks of seawater responded to thyroxine injection by a 39 percent increase in swimming speed. Large replication resulted in highly significant (P less than 0.001) difference between treated fish and controls.	Woodhead (1978), AMIC-3829
Tinsan (ethyl mercury phosphate)	Salmo gairdneri	L	—	2.0 (SB 1-2)	p.e.f (1 hr exposure daily for up to 11 days)	Single exposures of fish to organomercury compounds resulted in peak concentrations of mercury as follows: gills, 3 hr; blood, 32 hr; liver, 7 dal kidney 21. For repeated one hr (daily) exposures peak concentrations were: blood, 10 dal liver, 19 dal kidney, 61 dal muscle, 7 da. The concentration of mercury was always lowest in muscle tissue. Feeding experiments with PMA showed mercury could be passed from fingerlings to larger fish. The authors conclude that either legal size or fingerling hatchery fish treated with organomercurials could be a public health hazard.	Rucker, et al (1969), AMIC-5733
Tin	Coregonus clupeaformis	FL	Moose Lake, Can.	3.6 (residue)	—	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et AL(1971), AMIC-3819
Tin	Coregonus clupeaformis	FL	Lake Ontario, Can.	0.8 (residue)	—	same as above	Uthe, et AL(1971), AMIC-3819
Tin	Esox lucius	FL	Moose Lake, Can.	5.4 (residue)	—	same as above	Uthe, et al (1971), AMIC-3819
Tin	Esox lucius	FL	Lake St. Pierre, Can.	0.7 (residue)	—	same as above	Uthe, et al (1971), AMIC-3819
Tin	Esox lucius	FL	Lake Erie,	0.5 (residue)	—	same as above	Uthe, et al

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
			Can.				
TIn	Osmerus mordax	FL	Lake Erie, Can.	1.2 (residue)	--	same as above	(1971), AMIC-3819
TIn	Perca flavescens	FL	Lake Erie, Can.	0.6 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
TN	Fundulus heteroclitus	BSA	--	0.000000-0.0001 9 (T4)	a*,c,e, and synthetic seawater	A laboratory procedure based on Standard Methods for 96-hr toxicity determinations of crude oil and oil-dispersant mixtures was described. The dispersants varied considerably in toxicity, ranging from 0.01 to 7.1 ml/l, TL50 for 96 hr. These did not differ significantly from 248 hr values. The dispersants were designated as CY, DD, CI, OD, AD, PC, NH, TN, BP, and NA with no further description of their chemical nature or source. Only a few bioassays were conducted with shrimp. Mollusks and echinoderms were suggested as suitable test animals. The authors stated that the method could be used to test any product for toxicity in seawater.	LaRoche, et al (1970), AMIC-445
TN	Nereis virens	BSA	--	0.00006-0.00033 (T4)	a*,c,e, and synthetic seawater	same as above	LaRoche,et al (1970), AMIC-445
TOK	Gammarus fasciatus	BSA	--	0.38 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), AMIC-453
Tordon C	Roshara heteromorpha	BCFA and BSA	--	248 (T2)	a*,c,e,f, hard (HW) or salt (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water	Alabaster (1969), AMIC-9429

						and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Terbon M	Rasbora heteromorpha	BCFA and BSA	--	185 (T2)	S*,C,O,F; hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5429
Toxaphene	Ictalurus punctatus	BSA	--	0.013 (T4)	S; synthetic test water	Organochlorine insecticides were the most toxic compounds. organophosphates intermediate, carbamates the least toxic. Brown trout was the species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	Macek,et al (1978), AMIC-9518
Toxaphene	Ictalurus melas	BSA	--	0.005 (T4)	S; synthetic test water	same as above	Macek, etal (1978), AMIC-9518
Toxaphene	Carassius auratus	BSA	--	0.014 (T4)	S; synthetic test water	same as above	Macek,et al (1978), AMIC-9518
Toxaphene	Cyprinus carpio	BSA	--	0.004 (T4)	S; synthetic test water	same as above	Macek,et al (1978), AMIC-9518
Toxaphene	Pimephales promelas	BSA	--	0.014 (T4)	S; synthetic test water	same as above	Macek,et al (1978), AMIC-9518
Toxaphene	Lepomis macrochirus	BSA	--	0.010 (T4)	S; synthetic test water	same as above	Macek,et al (1978), AMIC-9518
Toxaphene	Lepomis microlophus	BSA	--	0.013 (T4)	S; synthetic test water	same as above	Macek,et al (1978), AMIC-9518
Toxaphene	Micropterus salmoides	BSA	--	0.002 (T4)	S; synthetic	same as above	Macek,et al (1978),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					test water		AMIC-5518
Toxaphene	Salmo gairdneri	BSA	--	0.011 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Toxaphene	Salmo trutta	BSA	--	0.003 (T4)	a, synthetic test water	same as above	Macek, et al (1970), AMIC-5518
Toxaphene	Oncorhynchus kisutch	BSA	--	0.008 (T4)	a, synthetic test water	same as above	Macek,et al (1970), AMIC-5518
Toxaphene	Perca flavescens	BSA	--	0.012 (T4)	a, synthetic testwater	same as above	Macek,et al (1970), AMIC-5518
Toxaphene	Palaemonetes kadiakensis (resistant)	BSA	--	0.044-0.229 (T1)	a[a]	Bioassays were conducted with shrimp from three areas of intensive pesticide use and from an unexposed area. Previously exposed shrimp were from 1 to 25 times more resistant than unexposed shrimp. Both types of shrimp were also exposed in cages to waters of the contaminated areas. Susceptible shrimp suffered 66 percent more mortality than did resistant shrimp. The toxicity of the insecticides ranked in descending order was as follows: most toxic, Endrin, DDT, Methyl parathion, Parathion; medium toxicity, Guthion, Lindane, Toxaphene, Strobane; least toxic Chlordane, Sevin, and Heptachlor.	Neavi, et al (1970), AMIC-5519
Toxaphene	Palaemonetes kadiakensis (non-resistant)	BSA	--	0.0269 (T1)	a[a]	same as above	Neavi, et al (1970), AMIC-5519
Toxaphene	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops	FL and BSA	State College, Miss.	0.045 (84 percent KI)	--	The response of pesticide-resistant aquatic organisms to various pesticides was compared to the response of non-resistant species. Pesticide-resistant species were collected at Belzoni and non-resistant	Neavi, et al (1969), AMIC-5979

	vernalis, Eucyclops agilis,Macrec Macrocyclops albidus, Orthocyclops modestus)					species at State College. Copepods, clams, snails, and sludge worms from Belzoni were considerably more tolerant to pesticides than the non-resistant organisms. The authors note that the effect of increased tolerance in the organisms is an increase in the amount of pesticide residues available to animals of higher trophic levels.	
Toxaphene	Copepods (Cyclops bicuspidus, Cyclops varicans, Cyclops vernalis, Eucyclops agilis,Macrec Macrocyclops albidus, Orthocyclops modestus)	FL and BSA	Belzoni, Miss	0.845 (28 percent KZ)	--	same as above	Naqvi, et al (1969), AMIC-5979
Toxaphene	Tubifex tubifex	FL and BSA	Belzoni, Miss.	6.8 (NTE)	--	same as above	Naqvi, etal (1969), AMIC-5979
Toxaphene	Physa gyrina	FL and BSA	State College, Miss.	8.45(K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Toxaphene	Physa gyrina	FL and BSA	Belzoni, Miss.	8.45 (35 percent K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Toxaphene	Eupera singlevi	FL and BSA	State College, Miss.	8.78 (K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Toxaphene	Eupera singlevi	FL and BSA	Belzoni, Miss.	8.78 (48 percent K3)	--	same as above	Naqvi, et al (1969), AMIC-5979
Toxaphene	Mercenaria mercenaria (eggs)	L	--	1.12 (72)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the	Davis, et al (1969),AMIC-5998

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
Toxaphene	Mercenaria mercenaria (larvae)	L	—	less than 0.25 (T12)	--	same as above	Davis, et al (1969), AMIC-5498
Toxion	Carcinus maenas	BSA	—	163 (T2)	as(continuous, aeration, sea water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Toxion	Cardium edule	BSA	—	27.4 (T2)	as(continuous, aeration, sea water, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
Toxion	Crangon crangon	BSA	—	6.6 (T2)	as(continuous, aeration, sea water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Toxion	Pandalus montagui	BSA	—	8.96 (T2)	as(continuous, aeration, sea water, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701

Trace organics (CCE)	Rainbow trout	BSA	--	36 (T1)	--	The organic micropollutants used in the study were recovered from spring and well water and Missouri River water. Chronic effects were studied by alternately placing the fish in the test solution for 5 days followed by a 5-day period in a recovery solution. Results of the tests are also given as total accumulated survival time. Studies were also conducted to determine the physiological effects of the pollutants, and equations were developed for accurately estimating the toxicity of trace organics. CCE and CAE from spring water were not generally toxic individually, but often showed strong synergistic behavior when combined at naturally occurring levels. CCE from river water proved to be most toxic of all organics.	Smith, et al (1978), AMIC-993
Trace organics (CCE)	Rainbow trout	BSCH	--	18 (T 5-18)	--	same as above	Smith, et al (1978), AMIC-993
Trace organics (CCE)	Rainbow trout	BSCH	--	1.8 (T more than 19)	--	same as above	Smith, et al (1978), AMIC-993
Trace organics (CCE)	Golden shiner	BSA	--	59 (T1)	--	same as above	Smith, et al (1978), AMIC-993
Trace organics (CCE)	Blue-green sunfish	BSA	--	56 (T1)	--	same as above	Smith, et al (1978), AMIC-993
Trace organics (CCE and CAE)	Rainbow trout	BSA	--	88-201 (T1)	--	same as above	Smith, et al (1978), AMIC-993
Trace organics (CCE and CAE)	Rainbow trout	BSCH	--	18 (T 28-38)	--	same as above	Smith, et al (1978), AMIC-993
Trace organics (CCE and CAE)	Rainbow trout	BSCH	--	1.8 (T more than 54)	--	same as above	Smith, et al (1978),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Trace organics (CCE and CAE)	Blue-green sunfish	BSA	--	137-166(T1)	--	same as above	AMIC-993
Trace organics (CCE and CAE)	Red shiner	BSA	--	195 (T1)	--	same as above	Smith, et al (1970), AMIC-993
Trace organics (CCE and CAE)	Red shiner	BSCH	--	24 (T 28-30)	--	same as above	Smith, et al(1970), AMIC-993
Trace organics (CCE and CAE)	Red shiner	BSCH	--	5.6 (T45 - more than 65)	--	same as above	Smith, et al (1970), AMIC-993
Trace organics (CCE and CAE)	Golden shiner	BSA	--	180 (T1)	--	same as above	Smith, et al(1970), AMIC-993
Trace organics (CCE and CAE)	Mosquitofish	BSA	--	178 (NTES)	--	same as above	Smith, et al(1970), AMIC-993
Trefian E.C.	Rasbora heteromorpha	BCFA and BSA	--	0.28 (T2, softwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Trefian E.C.	Rasbora heteromorpha	BCFA and BSA	--	0.28 (T1,hardwater)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some	same as above	Alabaster (1969), AMIC-5425

						species	
Tributyl tin chloride	Phaeidium sabiguum	L	--	0.5-10.0 (100 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892
Tributyl tin oxide	Salmo gairdneri	BCFA and BSA	--	0.027 (T1)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Tributyl tin oxide	Salmo gairdneri	BCFA and BSA	--	0.028 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
Tricaine methanesulfonate (finquel)	Salvelinus fontinalis	L	--	180 (NTE)	a*	Anesthetization of brook trout resulted in alterations of hemoglobin, tissue and plasma water content, electrolytes, aortic pressure, and ventilatory rate and amplitude. Finquel apparently exerted depressive influence on central autonomic functions. Handling alone resulted in changes in plasma	Houston, et al (1971), AMIC-3823

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						glucose and lactate content, and in a number of electrolytes.	
Trigpine methanesulfonate	Salvelinus fontinalis	L	--	188(NTE)	a*	Study of the effects of anesthesia, handling, and experimental preparation of brook trout resulted in alterations in hematological characteristics, hyperglycemia, changes in plasma, tissue, cellular ion concentrations, and equilibrium conditions. Short-term (2-6 hr) effects correlated with clearances of the anesthetic while persistent effects were believed to be associated with generalized endocrine response to trauma.	Houston, et al (1971), AMIC-3822
Trichlorobenzene	Mercenaria mercenaria (eggs)	L	--	greater than10.0 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	Davis, et al (1969), AMIC-5998
Trichlorobenzene	Mercenaria mercenaria (larvae)	L	--	greater than 10.0 (T12)	--	same as above	Davis, et al (1969), AMIC-5998
Trichlorobenzene	Crassostrea virginica (eggs)	L	--	3.13 (T2)	--	same as above	Davis, et al(1969), AMIC-5998
Trifluralin	Asellus brevicaudus	BSA	--	2.8 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978), AMIC-453
Trifluralin	Orconectes nais	BSA	--	58.0 (T2)	a*	same as above	Sanders (1978), AMIC-453

Trifluralin	Daphnia magna	BSA	--	0.56 (T2)	a°	same as above	Sanders (1978), ANIC-453
Trifluralin	Cyprideasis vidua	BSA	--	0.25 (T2)	a°	same as above	Sanders(1978), ANIC-453
Trifluralin	Lepomis macrochirus	BSA	--	0.019 (T2)	a°	same as above	Sanders (1978), ANIC-453
Trifluralin	Gammarus fasciatus	BSA	--	1.8 (T2)	a°	same as above	Sanders(1978), ANIC-453
Trifluralin	Paleomontes kadiakensis	BSA	--	1.8 (T4)	a°	same as above	Sanders (1978), ANIC-453
Trioxene	Salmo gairdneri	BCFA and BSA	--	18 (T2)	aa,c,e,f, hard (HW) or soft (SW) synthetic dilution water or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-9425
Trixabon	Rasbora heteromorpha	BCFA and BSA	--	0.34 (T2)	a°,c,e,f, hard (HW) or SOFT(SW) synthetic dilution rater, or seawater for some species	same as above	Alabaster (1969), ANIC-9425
Tubotex	Rasbora	BCFA	--	0.27 (T2)	a°,c,e,f,	One hundred sixty-four	Alabaster

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
	heteromorpha	and BSA			hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	(1969), AMIC-5425
Uranium	Alosa pseudo-harengus	FL	Great Lakes - Superior, Michigan, and Erie	0.0026 (residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 100 ppb, barium - 0.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1970), AMIC-3778
Uranium	Percopsis omiscomaycus	FL	Great Lakes - Superior, Michigan, and Erie	0.0008(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Roccus chrysops	FL	Great Lakes - Superior, Michigan, and Erie	0.002(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Perca flavescens	FL	Great Lakes - Superior, Michigan, and Erie	0.0009(residue)	--	same as above	Lucas, et al (1970), AMIC-3778
Uranium	Stizostedion vitreum vitreum	FL	Great Lakes - Superior, Michigan, and Erie	0.001 (residue)	--	same as above	Lucas, et al (1970), AMIC-3778

Uranium	Coregonus artedii	FL	Great Lakes - Superior, Michigan and Erie	0.002(residue)	--	same as above		Lucas, et al (1970), AMIC-3778
Uranium	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	0.0006(residue)	--	same as above		Lucas, et al (1970), AMIC-3778
Uranium	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	0.0035(residue)	--	same as above		Lucas, et al (1970), AMIC-3778
Uranium	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	0.0004(residue)	--	same as above		Lucas, et al (1970), AMIC-3778
Uranium	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	0.002(residue)	--	same as above		Lucas, et al (1970), AMIC-3778
Uranium	Osmerus mordax	FL	Great Lakes - Superior, Michigan, and Erie	0.002(residue)	--	same as above		Lucas, et al (1970), AMIC-3778
Uranium	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	0.0005(residue)	--	same as above		Lucas, et al (1970), AMIC-3778
Uranium	Notropis hudsonius	FL	Great Lakes - Superior, Michigan, and Erie	0.0056(residue)	--	same as above		Lucas, et al (1970), AMIC-3778
Uranium	Coregonus clupeaformis	FL	Moose Lake, Can.	3 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.		Uthe, et al (1971), AMIC-3819
Uranium	Coregonus clupeaformis	FL	Lake Ontario, Can.	2 (residue)	--	same as above		Uthe, et al (1971), AMIC-3819

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Uranium	Esox lucius	FL	Moose Lake, Can.	3 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Uranium	Esox lucius	FL	Lake St. Pierre, Can.	2 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Uranium	Esox lucius	FL	Lake Erie, Can.	1 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Uranium	Oserus mordax	FL	Lake Erie, Can.	2 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Uranium	Perca flavescens	FL	Lake Erie, Can.	1 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
Vapona	Salmo gairdneri	BCFA and BSA	--	925 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5429
Vapona	Rasbora heteromorpha	BCFA and BSA	--	460 (T2)	a*,c,e,f, hard (HW) or SOFT(SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5429

Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	3.3 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of tissues could be used to determine the effect of pollutants on marine organisms.	Stapleton (1968), AMIC-5988
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.9 (dorsal muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	3.2 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	1.7 (ventral muscle residue)	--	same as above	Stapleton (1968), AMIC-5988
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	5.7 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	4.2 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Vanadium	Paralabrax clathratus (gravid females)	FM	Catalina Island, Cal.	3.4 (gonads residue)	--	same as above	Stapleton (1968), AMIC-5988
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.4 (liver residue)	--	same as above	Stapleton (1968), AMIC-5988
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	3.3 (liver residue)	--	same as above	Stapleton (1968),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-5980
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	2.9 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	2.9 (integument residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	3.2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	3.2 (heart residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Scattergood Steam Plant, Los Angeles, Cal.	9 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Vanadium	Paralabrax clathratus	FM	Catalina Island, Cal.	7.6 (eyeball residue)	--	same as above	Stapleton (1968), AMIC-5980
Vapam	Rasbora heteromorpha	BCFA and BSA	--	8.13 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Velsicol AR 50G (87.2 percent plus 9 percent Emcol H-146,	Rasbora heteromorpha	BCFA and BSA	--	7.2 (T2)	a*,c,e,f, hard (HW)or	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a	Alabaster (1969),AMIC-5425

2 percentEmcol H-508X, 1.2percent Epichlorhydrin)					soft (SW) synthetic dilution water, or seawater forsome species	wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
Velsicol AR 58G (89 percent plus 9 percent Emcol H-146, 2 percent Emcol H-508X)	Rasbora heteromorpha	BCFA and BSA	--	9.2 (T2)	a°,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), ANIC-542%
Venzar	Rasbora heteromorpha	BCFA and BSA	--	58 (T2)	a°,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), ANIC-542%
Vergemaster (saline vergicide weedkiller 8)	Salmo gairdneri	BCFA and BSA	--	2.2 (T2)	a°,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), ANIC-542%
Vernolate	Gammarus fasciatus	BSA	--	28.8 (T2), 13.8 a° (T4)		Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration	Sanders (1970),ANIC-453

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	
Vernolate	Palaemonetes kadiakensis	BSA	--	1.9 (T2)	a*	same as above	Sanders (1978), AMIC-453
Vernolate	Asellus brevicaudus	BSA	--	5.6 (T2)	a*	same as above	Sanders (1978), AMIC-453
Vernolate	Orconectes nais	BSA	--	24.8 (T2)	a*	same as above	Sanders (1978), AMIC-453
Vernolate	Daphnia magna	BSA	--	1.1 (T2)	a*	same as above	Sanders (1978), AMIC-453
Vernolate	Cyprideopsis vidua	BSA	--	8.24 (T2)	a*	same as above	Sanders(1978), AMIC-453
Vernolate	Lepomis macrochirus	BSA	--	9.2 (T2)	a*	same as above	Sanders (1978), AMIC-453
Vinyl acetate	Asterias rubens	BSA	--	330-1000 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7781
Vinyl acetate	Crangon crangon	BSA	--	10-100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7781

Vinyl acetate	Platichthys flesus	BSA	--	greater than 100 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Weedazol T-L	Crangon crangon	BSA	--	1000-3000 (T2)	ae(continuous aeration, seawater, and daily solution renewal)	same as above	Portmann, et al (1971), AMIC-7701
Weedazol	Rasbora heteromorpha	BCFA and BSA	--	540 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-9425
WL 4285	Rasbora heteromorpha	BCFA and BSA	--	0.90 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-9425
Yellow phosphorus	Clupea harengus (10-15 cm)	BCFA	--	0.016 (T 12 hRI	a*,c,f	The lethal effect of yellow phosphorus was apparently irreversible and possibly cumulative. This form of phosphorus was surprisingly stable in bottom muds where oxygen content was low. The most probable cause of death was asphyxiation brought on by massive hemolysis.	Zitko, et al (1970), AMIC-3817
Yellow phosphorus	Salmo salar (7-13 cm)	BCFA	--	0.018 (incipient lethal level)	a*,c,f	same as above	Zitko, et al (1970), AMIC-3817
Yellow phosphorus	Homarus americanus	BCFA	--	0.860 (T10)	a*,c,f	same as above	Zitko, et al(1970), AMIC-3817

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Yellow phosphorus	Gammarus oceanicus	BCFA	--	3-4 (K1)	a*,c,f	same as above	Zitko, et al (1978), AMIC-3817
Yellow phosphorus	Salvelinus fontinalis	BCFA	--	0.0005 (T 200 hr)	a	The data were presented at LT sub 50 (time to 50 percent lethality). The approximate TL sub m data cited were interpolated from plotted TL sub 50 values. Redness, hemolysis, and reduced hematocrits correlated directly with toxicity to brook trout. No redness or hemolysis occurred in smelt although reduced hematocrits occurred. Herring also turned red with hemolysis and redness around head and fins. In time phosphorus was toxic at concentrations as low as 0.5 micron/l.	Fletcher, et al (1978), AMIC-839
Yellow phosphorus	Salvelinus fontinalis	BCFA	--	1.2 (T 2.7 hr)	a	same as above	Fletcher, et al(1978), AMIC-839
Yellow phosphorus	Osmerus mordax	BCFA	--	0.0005 (T 190 hr)	a	same as above	Fletcher, et al(1978), AMIC-839
Yellow phosphorus	Osmerus mordax	BCFA	--	1.8 (T 12 hr)	a	same as above	Fletcher, et al(1978), AMIC-839
Yellow phosphorus	Clupea harengus	BCFA	--	0.1 (T 3.6 hr)	a	same as above	Fletcher, et al(1978), AMIC-839
Young's Daffy	Rasbora heteromorpha	BCFA and BSA	--	2.9 (T2)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster, (1969), AMIC-5425
Zectran	Ictalurus punctatus	BSA	--	11.48 (T4)	a, synthetic test water	Organochlorine insecticides were the most toxic compounds, organophosphates intermediate, carbamates the least toxic. Brown trout was the	Hacek, et al (1978), AMIC-5518

						species most susceptible to organochlorines, coho salmon the most susceptible to carbamates, and goldfish were the least susceptible of all species. Safe concentrations established by bioassays with salmonids or centrarchids would likely be safe for cyprinids and ictalurids. Safe levels for ictalurids or cyprinids would probably be hazardous for centrarchids and salmonids. The use of goldfish in bioassays was discouraged.	
Zectran	Ictalurus melas	BSA	--	16.78 (T4)	a; synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Zectran	Carassius auratus	BSA	--	19.14 (T4)	a; synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Zectran	Cyprinus carpio	BSA	--	13.48 (T4)	a; synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Zectran	Pimephales promelas	BSA	--	17.88 (T4)	a; synthetic test water	same as above	Macek,et al (1970), AMIC-5510
Zectran	Lepomis macrochirus	BSA	--	11.28 (T4)	a; synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Zectran	Lepomis microlophus	BSA	--	16.78 (T4)	a; synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Zectran	Micropterus salmoides	BSA	--	14.78 (T4)	a; synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Zectran	Salmo gairdneri	BSA	--	18.28 (T4)	a; synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Zectran	Salmo trutta	BSA	--	8.18 (T4)	a; synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Zectran	Oncorhynchus kisutch	BSA	--	1.73 (T4)	a; synthetic test water	same as above	Macek, etal (1970), AMIC-5510
Zectran	Perca flavescens	BSA	--	2.48 (T4)	a; synthetic test water	same as above	Macek, et al(1970), AMIC-5510
Zinc chloride (as zinc)	Brachydanio rerio	BSA	--	3.7-6.7 (S84)	a.e. and synthetic dilution water	Feeding behavior was affected by zinc, chromium, and ARS in that more time was required for consuming measured amounts of food. Feeding response was	Cairns, et al (1967),AMIC-5787

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						also affected by aeration, feeding schedule, light intensity, and outside disturbances. The authors note that much more work is needed to establish the reliability of this procedure.	
Zinc chloride (as Zn)	Lepomis macrochirus	BSA, L	--	3.3 (T4)	a*,e, and synthetic dilution water	This study was conducted to determine the relative toxicities of 20 common constituents of industrial wastes to a fish, an alga, and an invertebrate. The experiments were conducted over a 10-year period for varied purposes. The authors recommend bioassays with at least three components of the food web.	Patrick, et al (1968), AMIC-5720
Zinc chloride (as Zn)	Nitzschia linearis	BSA, L	--	4.3 (T5)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Zinc chloride (as Zn)	Physa heterostropha	BSA, L	--	8.98 (T4)	a*,e, and synthetic dilution water	same as above	Patrick, et al (1968), AMIC-5720
Zinc chloride	Lebistes reticulatus (1 mo, 1.1 cm)	BCF	--	0.56 (T4)	a,c,d,e,f, n,q, phosphates, carbonates, bicarbonates, sulfates, and conductance	Toxicity thresholds and a dilution mixture threshold were calculated from fish bioassay data for zinc chloride and potassium cyanide. Threshold concentrations for zinc and cyanide were found to be 8.33 and 8.238 mg/l, respectively. A procedure for determining toxicity threshold concentrations for mixtures of chemicals was also presented. A zinc-cyanide dilution ratio for toxicity threshold (THDR) was found to be a linear function of the concentration of the two ions taken separately, and therefore: THDR equals 1.26-0.86C$_N$-1.72Zn. Based on a multicomponent equation, mixtures of zinc and cyanide exhibit an antagonistic effect. This appears to be a significant advance in an approach to estimating safe concentrations for water pollutants.	Chen,et al (1969), AMIC-3831
Zinc chloride	Lebistes reticulatus (1 mo, 1.1 cm)	BCF	--	1.8 (T 1.5)	a,c,d,e,f, n,q, phosphates, carbonates, bi-	same as above	Chen, et al (1969), AMIC-3831

					carbonates, sulfates, and conductance		
Zinc dimethyldithiocarbamate	Phenidium sebiguum	L	--	0.9-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1978), AMIC-892
Zinc hydroxyquinone	Rasbora heteromorpha	BCFA and BSA	--	0.18 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
Zinc sodium citrate (as Zn)	Mysidopsis cuculiata (larvae)	L	--	33 (T 2 hr)	a,c,i, and salinity	This study was conducted to determine species of marine larvae suitable for use in test screening antifouling chemicals. A. salina (brine shrimp) appeared to have the best potential for this purpose. A. salina larvae sensitivity was greatest starting at age 20-88 hr, and tolerated relatively low pH (5.8).	Wisely, et al (1967), AMIC-5788
Zinc sodium citrate (as Zn)	Spirorbis lamellosa (larvae)	L	--	4.9 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-5788

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
Zinc sodium citrate (as Zn)	Buguia neritina (larvae)	L	--	5.1 (T 2 hr)	a,c,i, and salinity	same as above	Wisely, et al (1967), AMIC-4788
Zinc sulfate(as Zn)	Acroneuria	BSA	--	32 (T14)	a*,c,d,e,f	Ephemerella (mayfly) was the most sensitive aquatic insect of those studied, and copper the most broadly toxic metal. The authors suggest that aquatic insects may not be as sensitive to heavy metals as fish.	Warnick, et al(1969), AMIC-3767
Zinc sulfate (as Zn)	Ephemerella	BSA	--	16 (T18)	a*,c,d,e,f	same as above	Warnick, et al (1969),AMIC-3767
Zinc sulfate (as Zn)	Hydropsyche	BSA	--	32 (T11)	a*,c,d,e,f	same as above	Warnick, et al(1969), AMIC-3767
Zinc sulfate	Lepomis macrochirus	BSCF	--	2.55 (SB)	a,c,d,e,f, r*,t*	Results of monitoring fish breathing frequency were primarily reported. The indicated Zn concentration was the lowest detectable. Reproduction and growth of bluegills were apparently not affected by 0.025 and 0.075 mg/l. At a concentration of 0.25 mg/l spawning was inhibited and newly-hatched fry were killed. The authors suggest ways of improving this technique and suggest simultaneous use with fish movement change (See Cairns and Waller, 1971).	Cairns, et al (1971), AMIC-3232
Zinc sulfate	Salmo gairdneri	BCF	--	0.0856 (avoidance)	a*,c,f	The threshold avoidance limit was essentially the same at 9.5 and 17.0 C. The value noted is 0.01 of the lethal threshold concentration, according to the author. Improvements in the test procedure are described.	Sprague (1968), AMIC-3768
Zinc sulfate	Salmo gairdneri	BCF	--	0.56 (threshold toxicity)	a*,c,f	same as above	Sprague (1968), AMIC-3768
Zinc sulfate	Pimephales	BCFCH	--	0.18 (SB)	a,c,d,e,f,	Hatching was unaffected at the	Brungs

	promelas (0.3-0.4 g)				i,n,q, Ca, Mg, Na, K, and SO4	indicated concentration of zinc, but egg production was significantly reduced. Growth inhibition occurred at 2.0 ppm. Egg production was the most sensitive parameter studied. The author notes that an application factor of 0.005 would exist if a 20 percent reduction of egg production is biologically insignificant.	(1969), ANIC-9458
Zinc sulfate	Xiphophorus maculatus (45 mm)	BSA	—	12.0 (T4)	a,b,e,f, m, Fe, Mn, Cu, and Mg	Fathead minnows were more susceptible to zinc than inbred platyfish. Male platyfish were more susceptible than female. The authors suggest the inbred platyfish as a candidate for bioassay evaluations due to its known (31 generations) genetic background.	Rachlin, et al (1968), ANIC-5722
Zinc sulfate	Pimephales promelas (45 mm)	BSA	—	7.6 (T4)	a*,b,c,f,m, Fe,Mn, Cu, and Mg	same as above	Rachlin, et al (1968), ANIC-5722
Zinc sulfate	Rainbow trout (RTG-2 gonad cell line)	L	—	10.0 (SB4)		Tissue culture study using the Eagles MEM medium resulted in 70 percent reduction in mitotic index and cytotoxic changes in cell morphology. Concentrations at 0 to 10.0 ppm zinc had no significant effect. The trout cells were less sensitive than cultured cells of fathead minnow.	Rachlin, et al (1968), ANIC-5722
Zinc (plus ammonia and phenol)	Salmo gairdneri	BSA	—	0.5-2.54(T2)	a,c*,d,e*, f,m	Rainbow trout were exposed to concentrations of fluctuating levels of ammonia, phenol, and zinc and to constant mixtures of the three. Tests with fluctuating levels of toxicants showed that LC50 values were similar to those for constant concentrations as long as the periodicity of the fluctuation did not exceed the resistance time for the poison. Except when zinc predominated in the mixtures, the fractional toxicities could be summed to give the toxicity of the mixture.	Brown, et al (1969), ANIC-5993
Zinc (plus copper, nickel)	Salmo gairdneri	BSA	—	0.5-1.0 (T2)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol; copper, zinc, and phenol; and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could	Brown, et al (1970), ANIC-5994

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						be adequately described by summations of the fractional toxicities.	
Zinc (plus copper, phenol)	Salmo gairdneri	BSA	--	0.6-2.48 (72)	a,c,e	same as above	Brown,et al (1978), AMIC-9994
Zinc	Coregonus artedii	FL	Great Lakes - Superior, Michigan, and Erie	38(residue)	--	Trace element content of fish from Lakes Superior, Michigan, and Erie was determined by activation analysis. Whole body and liver residues were determined. Concentrations varied with species and lake. Other elements found were: antimony - 5 to 180 ppb, barium - 8.2 ppm, cesium - 3 ppb, lanthanum - 1 to 20 ppb, mercury - 10 ppb, rhenium - 0.5 to 5 ppb, rubidium - 0.06 to 6 ppm, scandium - 2 ppb, selenium - 0.1 to 2 ppb, silver - 0.001 ppb.	Lucas, et al (1978), AMIC-3778
Zinc	Coregonus clupeaformis	FL	Great Lakes - Superior, Michigan, and Erie	23(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Zinc	Coregonus hoyi	FL	Great Lakes - Superior, Michigan, and Erie	44(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Zinc	Prosopium cylindraceum	FL	Great Lakes - Superior, Michigan, and Erie	11(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Zinc	Salvelinus namaycush	FL	Great Lakes - Superior, Michigan, and Erie	48(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Zinc	Carassius auratus	FL	Great Lakes - Superior, Michigan, and Erie	36(residue)	--	same as above	Lucas, et al (1978), AMIC-3778
Zinc	Roccus	FL	Great Lakes	28(residue)	--	same as above	Lucas, et al

		chrysops		- Superior, Michigan, and Erie			(1978), AMIC-3776
	Zinc	Coregonus clupeaformis	FL	Moose Lake, Can.	14 (residue)	--	Concentrations of 13 toxic elements in dressed fish from heavily industrialized and non-industrialized areas were determined. Only mercury exceeded regulatory limits, and concentrations of most elements were essentially the same in fish from both areas.	Uthe, et AL(1971), AMIC-3819
	Zinc	Coregonus clupeaformis	FL	Lake Ontario, Can.	12 (residue)	--	same as above	Uthe, et AL(1971), AMIC-3819
	Zinc	Esox lucius	FL	Moose Lake, Can.	19 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
	Zinc	Esox lucius	FL	Lake St. Pierre, Can.	19 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
	Zinc	Esox lucius	FL	Lake Erie, Can.	11 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
	Zinc	Osmerus mordax	FL	Lake Erie, Can.	28 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
	Zinc	Perca flavescens	FL	Lake Erie, Can.	12 (residue)	--	same as above	Uthe, et al (1971), AMIC-3819
	Zinc	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	26 (dorsal muscle residue)	--	Fish collected from an effluent pipe of a steam plant and from offshore waters of Catalina Island were analyzed for trace element content. Trace element content of the effluent water was at least 5 times greater than that of normal sea water for cadmium, copper, nickel, zinc, and chromium. Livers of fish from the effluent were nearly twice the size of those from the ocean. Greatest differences in concentration occurred with aluminum, cadmium, and nickel. Silver, barium, lithium, and lead showed the least differences. The author concluded that trace element analysis of	Stapleton (1968), AMIC-3888

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						tissues could be used to determine the effect of pollutants on marine organisms.	
Zinc	Paralabrax clathratus	FN	Catalina Island, Cal.	18 (dorsal muscle residue)	--	same as above	Stebleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	15 (ventral muscle residue)	--	same as above	Stebleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FN	Catalina Island, Cal.	9 (ventral muscle residue)	--	same as above	Stebleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	172 (gonads residue)	--	same as above	Stebleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FN	Catalina Island, Cal.	119 (gonads residue)	--	same as above	Stebleton (1968), ANIC-5988
Zinc	Paralabrax clathratus (gravid females)	FN	Catalina Island, Cal.	245 (gonads residue)	--	same as above	Stebleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	61 (liver residue)	--	same as above	Stebleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FN	Catalina Island, Cal.	188 (liver residue)	--	same as above	Stebleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FN	Scattergood Steam Plant, Los Angeles, Cal.	223 (integument residue)	--	same as above	Stebleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FN	Catalina Island, Cal.	198 (integument residue)	--	same as above	Stebleton (1968),

								ANIC-5988
Zinc	Paralabrax clathratus	FW	Scatterpood Steam Plant, Los Angeles, Cal.	82 (heart residue)	--		same as above	Stapleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FW	Catalina Island, Cal.	98 (heart residue)	--		same as above	Stapleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FW	Scatterpood Steam Plant, Los Angeles, Cal.	788 (eyeball residue)	--		same as above	Stapleton (1968), ANIC-5988
Zinc	Paralabrax clathratus	FW	Catalina Island, Cal.	688 (eyeball residue)	--		same as above	Stapleton (1968), ANIC-5988
Zinc	Salmo gairdneri	BSA	--	1.95-5.85 (fluctuating conc, T 2348-2968 min)	a,c°,d,e°, f,a	Rainbow trout were exposed to concentrations of fluctuating levels of arsenic, phenol, and zinc and to constant mixtures of the three. Tests with fluctuating levels of toxicants showed that LC50 values were similar to those for constant concentrations as long as the periodicity of the fluctuation did not exceed the resistance time for the poison. Except when zinc predominated in the mixtures, the fractional toxicities could be summed to give the toxicity of the mixture.	Brown, et al (1969), ANIC-5993
Zinc	Salmo gairdneri	BSA	--	3.9 (T 2488 min)	a,c°,d,e°, f,a	same as above	Brown, et al (1969), ANIC-5993
Zinc	Salmo gairdneri	BSA	--	4.8 (72)	a,c,e	Rainbow trout were exposed to copper, phenol, zinc, or nickel solutions to determine 48-hour LC50 values for mixtures of copper and phenol: copper, zinc, and phenol; and copper, zinc, and nickel. It was concluded that acute lethal toxicities of the mixtures could be adequately described by summations of the fractional toxicities.	Brown, et al (1970), ANIC-5994
$ZnSO_4 \cdot 7H_2O$ (as Zn 2 alus)	Lepomis macrochirus	BSA and CF	--	2.94-3.84 (384)	a,c,d,e,f, r,t	Results of monitoring fish movement by means of light beam interruption were primarily reported. The values given for bluegills were the	Cairns, et al (1971), ANIC-3231

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						lowest detectable concentration causing significant movement changes. Values for golden shiners and goldfish were obtained in preliminary studies. At 1/10 the indicated concentration, growth and reproduction of bluegills were significantly affected but not at 1/100 dilution. Considerable discussion and additional data are presented.	
ZnSO4 . 7H2O (as Zn 2 plus)	Notemigonus crysoleucas	BSA	--	7.9 (SO)	a,c,d,e,f, r,t	same as above	Cairns, et al (1971), AMIC-3231
ZnSO4 . 7H2O (as Zn 2 plus)	Carassius auratus	BSA	--	7.9 (K)	a,c,d,e,f, r,t	same as above	Cairns,et al (1971), AMIC-3231
Zn, Ni, Cr, CN, Cu, and Zn	Catostomus commersoni	BSACF (ML)	Grand River at Wyoming,Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	A mobile bioassay unit was utilized to conduct this study of municipal wastewater containing the indicated toxicants. River water was used as diluent. The conclusion was reached that synergistic or additive toxic effects occurred since toxicity was greater than that of any of the ions singly.	Zillich (1969), AMIC-2986
Zn, Ni, Cr, CN, Cu, and Zn	Pimephales promelas	BSACF (ML)	Grand River at Wyoming,Michigan	between 1.25-3.75 percent (T3)	a,c,e, conductivity, Ni,Cu,Cr, CN, and Zn	same as above	Zillich (1969), AMIC-2986
1,1"-methylenedi-2-naphthol	Ptychochellus oregonensis (71 mm)	BSA	--	8.886-8.819 (K 6-31 hr)	a,c,d,f, and conductivity	The chemical studied was found to be selectively lethal to sauwfish at concentrations 3 to 188 times more toxic to these species than to salmonids. Potency varied positively with concentration and temperature. Concentrations cited are for 18-16 C. A sheep and ducks showed no ill effects over a 7-day period when forced to drink water containing 18 ppm of the naphthol. A field application in a small lagoon containing several species of fish resulted only in kill of P. oregonensis. This chemical appears to be an effective piscicide that is selective for sauwfish.	MacPhee, et al (1969), AMIC-3458

1,1"-methylenedi-2-naphthol	Ptychocheilus oregonse (98 mm)	BSA	--	0.81-0.83(K 6-20 hr)	s°,c,d,f, and conductivity	same as above	MacPhee, et al (1969), AMIC-9498
1,1"-methylenedi-2-naphthol	Salvelinus fontinalis (91 mm)	BSA	--	0.3 (S84)	s°,c,d,f, and conductivity	same as above	MacPhee, et al (1969), AMIC-9498
1,1"-methylenedi-2-naphthol	Oncorhynchus tshawytscha (84 mm)	BSA	--	0.1 (S84)	s°,c,d,f, and conductivity	same as above	MacPhee, et al (1969), AMIC-9498
1,1"-methylenedi-2-naphthol	Oncorhynchus kisutch (102 mm)	BSA	--	0.6-1.3(S84)	s°,c,d,f, and conductivity	same as above	MacPhee, et al (1969), AMIC-9498
1,1"-methylenedi-2-naphthol	Salmo gairdneri (66 mm)	BSA	--	0.6-1.3 (S84)	s°,c,d,f, and conductivity	same as above	MacPhee, et al (1969), AMIC-9498
1,2 dichloropropane	Crangon crangon	BSA	--	greater than 100 (72)	ae(continuous aeration, seawater, and daily solution renewal)	One hundred-forty surface active agents, solvent emulsifiers, pesticides, polychlorinated biphenyls, pure inorganic, and organic chemicals were evaluated against as many as ten marine organisms. The authors noted that most published data of this type deal with toxicity of chemicals to freshwater organisms.	Portmann, et al (1971), AMIC-7701
1,2,3,4,9,9-hexachloro-1,4-ethano 1,4,4a,8a-tetrahydro -5,8-naphthoquinone	Phaeidium ambiguum	L	--	0.9-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of salt-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloroxine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), AMIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
2-amino-3-chloro-1,4-naphthoquinone	Phormidium subiguum	L	--	0.5-10.0(16per cent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), ANIC-892
2-chloro-4,6-bis (ethylamino) S-triazine	Phormidium subiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), ANIC-892
2-diethyl-amino-1,4-naphthoquinone	Phormidium subiguum	L	--	0.5-10.0(16per cent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors	Otto (1978), ANIC-892

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						means were found.	
2,3-dichloro-1,4-naphthoquinone	Pheraidium ambiguum	L	--	8.5-18.8 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (8.85 and 8.885 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1978), ANIC-892
2,4-D (acid)	Gammarus fasciatus	BSA	--	3.2 (T2)	a°	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978), ANIC-453
2,4-D (acid)	Daphnia magna	BSA	--	greater than 188.0 (T2)	a°	same as above	Sanders (1978), ANIC-453
2,4-D (acid)	Lepomis macrochirus	BSA	--	--	a°	same as above	Sanders (1978), ANIC-453
2,4-D (BEE)	Gammarus fasciatus	BSA	--	5.9 (T2), 5.9 (T4)	a°	same as above	Sanders (1978), ANIC-453
2,4-D (BEE)	Paleamontes kadiakensis	BSA	--	1.4 (T2)	a°	same as above	Sanders (1978), ANIC-453
2,4-D (BEE)	Asellus brevicaudus	BSA	--	3.2 (T2)	a°	same as above	Sanders (1978),

							AMIC-453
2,4-D (EEE)	Orconectes nais	BSA	--	greater than 188.0 (T2)	a°	same as above	Sanders (1978), AMIC-453
2,4-D (EEE)	Daphnia magna	BSA	--	9.6 (T2)	a°	same as above	Sanders (1978), AMIC-453
2,4-D (EEE)	Cyprideopsis vidua	BSA	--	1.8 (T2)	a°	same as above	Sanders (1978), AMIC-453
2,4-D (EEE)	Lepomis macrochirus	BSA	--	1.1 (T2)	a°	same as above	Sanders (1978), AMIC-453
2,4-D (butoxyethylester)	Rasbora heteromorpha	BCFA and BSA	--	1.8 (T2)	a°,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
2,4-D (clay based)	Rasbora heteromorpha	BCFA and BSA	--	428 (T1)	a°,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-5425
2,4-D (dimethylamine salt)	Crassostrea virginica (eggs)	L	--	28.4 (T2)	--	The effect of 52 pesticides on embryonic development of clams and oysters was reported. Synergistic effects with solvents were also reported. Most of the compounds affected development more than survival. Some, however, drastically reduced larval growth. The authors point out the necessity of evaluating the effects of	Davis, et al (1969), AMIC-5998

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						pesticides on all life stages of an organism and note the possibility of selecting chemicals for pest control that would not have serious effect on shellfish.	
2,4-D (dimethylamine salt)	Crassostrea virginica (larvae)	L	--	64.3 (T14)	--	same as above	Davis, et al (1969), ANIC-5998
2,4-D (dimethylamine salt)	Gammarus fasciatus	BSA	--	greater than100.0 (T2)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic. Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1970), ANIC-453
2,4-D (dimethylamine salt)	Paleomonetes kadiakensis	BSA	--	greaterthan 100.0 (T2)	a*	same as above	Sanders (1970), ANIC-453
2,4-D (dimethylamine salt)	Asellus brevicaudus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), ANIC-453
2,4-D (dimethylamine salt)	Orconectes nais	BSA	--	greater than 100.0 (T2)	*	same as above	Sanders (1970), ANIC-453
2,4-D (dimethylamine salt)	Daphnia magna	BSA	--	4.0 (T2)	a*	same as above	Sanders (1970), ANIC-453
2,4-D (dimethylamine salt)	Cyprideopsis vidua	BSA	--	8.0 (T2)	a*	same as above	Sanders (1970), ANIC-453
2,4-D (dimethylamine salt)	Lepomis macrochirus	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1970), ANIC-453
2,4-D (ester)	Crassostrea virginica (eggs)	L	--	8.0 (T2)	--	same as above	Davis, et al (1969), ANIC-

							5990
2,4-D (ester)	Crassostrea virginica (larvae)	L	--	0.74 (T14)	--	same as above	Davis, et al (19[illegible]),AMIC-599[illegible]
2,4-D (No salt)	Rasbora heteromorpha	BCFA and BSA	--	1,168 (T1)	a*,c,e,f, hard (HW)or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-5425
2,4-D (PGBE)	Gammarus fasciatus	BSA	--	2.6 (T2), 2.5 (T4)	a*	Of the aquatic weed herbicides evaluated, Diclone was the most toxic, Daphnia was generally the most sensitive organism. All of the crustacea were affected by much lower concentration levels of herbicides than indicated by the TL sub 50 values. All of the animals represent important food chain links.	Sanders (1978),AMIC-463
2,4-D (PGBE)	Palaemonetes kadiakensis	BSA	--	2.7 (T2)	a*	same as above	Sanders (1978), AMIC-463
2,4-D (PGBE)	Asellus brevicaudus	BSA	--	2.2 (T2)	a*	same as above	Sanders (1978), AMIC-463
2,4-D (PGBE)	Orconectes nais	BSA	--	greater than 100.0 (T2)	a*	same as above	Sanders (1978), AMIC-463
2,4-D (PGBE)	Daphnia magna	BSA	--	0.1 (T2)	a*	same as above	Sanders (1978), AMIC-463
2,4-D (PGBE)	Cypridopsis vidua	BSA	--	0.32 (T2)	a*	same as above	Sanders (1978), AMIC-463
2,4-D (PGBE)	Lepomis macrochirus	BSA	--	0.98 (T2)	a*	same as above	Sanders (1978),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-463
2,4-D (resin based)	Rasbora heteromorpha	BCFA and BSA	--	2,488 (T2)	a*,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some species	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	Alabaster (1969), AMIC-9429
2,4-D (resin based)	Salmo gairdneri	BCFA and BSA	--	1,928 (T2)	a*,c,e,f, hard (HW) or soft (SW) synthetic dilution water, or seawater for some species	same as above	Alabaster (1969), AMIC-9429
2,4-D	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Henderson-Theron (1971), AMIC-1856
2,4-D	Wolffia papulifera	L	--	1000 (K)	Hunter's medium diluted 1:5	All compounds were harmful to duckweed to some degree. Decreased populations were noted at non-lethal concentrations and some compounds (Malathion and 2,4-D) caused teratogenic effects at concentrations as low as 1 ppm.	Worthley, et al (1971), AMIC-3233
2,4 dinitrophenol	Negaprion brevirostris (1-3 kg)	BSA	--	10 (MTE 3 hr)	a,c,e	Date free study of drug effects on young lemon sharks were treated mathematically to demonstrate applicability of classical rate theory to the study of chemical shark deterrents. Incapacitation (narcosis) was the primary parameter used for effectiveness. This was usually quite rapid for the more effective drugs.	Baldridge (1969), AMIC-3832
2,4,5-T (butoxyethylester)	Rasbora heteromorpha	BCFA and BSA	--	1.0 (T2)	a*,c,e,f, hard (HW) or soft	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a	Alabaster (1969), AMIC-9429

					(SW) synthetic dilution water, or seawater for some species	wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
2,4,5-T	Fish (not specified)	--	--	greater than 0.1-1.0 (K)	--	Approximate toxicities of numerous pesticides commonly used in Britain were summarized. An excellent brief, general discussion of toxicity testing is also present.	Henderson-Thomas (1971), AMIC-1096
2'-bromo-3-nitrosali cylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Marking, et al (1970), AMIC-639L
2'-bromo-3-nitrosali cylanilide	Carassius auratus	BSA	--	10 (K1)	a*	same as above	Marking, et al (1970), AMIC-639L
2'-bromo-3-nitrosali cylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-639L
2'-bromo-3-nitrosali cylanilide	Pimephales promelas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-639L
2'-bromo-3-nitrosali cylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-639L
2'-bromo-3-nitrosali cylanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-639L
2'-bromo-3-nitrosali cylanilide	Lepomis macrochirus	BSA	--	10 (K 3hr)	a*	same as above	Marking, et al (1970), AMIC-639L
2'-bromo-3-nitrosali cylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1970), AMIC-639L
2'-chloro-4'-methyl-3-nitrosalicyl-anilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1970), AMIC-639L

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
2"-chloro-4"-methyl-3-nitrosalicyl-anilide	Carassius auratus	BSA	—	1.0 (K 3 hr)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-methyl-3-nitrosalicyl-anilide	Cyprinus carpio	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-methyl-3-nitrosalicyl-anilide	Pimephales promelas	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-methyl-3-nitrosalicyl-anilide	Ictalurus melas	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-methyl-3-nitrosalicyl-anilide	Lepomis cyanellus	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-methyl-3-nitrosalicyl-anilide	Lepomis macrochirus	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-methyl-3-nitrosalicyl-anilide	Perca flavescens	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-nitro-3-nitrosalicylanilide	Salmo gairdneri	BSA	—	1.0 (K 3 hr)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-nitro-3-nitrosalicylanilide	Carassius auratus	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-nitro-3-nitrosalicylanilide	Cyprinus carpio	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-nitro-3-nitrosalicylanilide	Pimephales promelas	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2"-chloro-4"-nitro-3	Ictalurus	BSA	—	1.0 (K 3 hr)	a*	same as above	Marking, et

-nitrosalicylanilide	melas						al (1978), AMIC-6391
2"-chloro-4"-nitro-3 -nitrosalicylanilide	Lepomis cyanellus	BSA	—	1.0 (K2)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-chloro-4"-nitro-3 -nitrosalicylanilide	Lepomis macrochirus	BSA	—	1.0 (K1)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-chloro-4"-nitro-3 -nitrosalicylanilide	Perca flavescens	BSA	—	1.0 (K1)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-chloro-5-nitro salicylanilide	Salmo gairdneri	BSA	—	1.0 (K 3 hr)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-chloro-5-nitro salicylanilide	Carassius auratus	BSA	—	10 (K1)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-chloro-5-nitro salicylanilide	Cyprinus carpio	BSA	—	10 (K 3 hr)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-chloro-5-nitro salicylanilide	Pimephales promelas	BSA	—	10 (K 3 hr)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-chloro-5-nitro salicylanilide	Ictalurus melas	BSA	—	1.0 (K2)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-chloro-5-nitro salicylanilide	Lepomis cyanellus	BSA	—	10 (K 3 hr)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-chloro-5-nitro salicylanilide	Lepomis macrochirus	BSA	—	10 (K 3 hr)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-chloro-5-nitro salicylanilide	Perca flavescens	BSA	—	10 (K 3 hr)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-iodo-3-nitro salicylanilide	Salmo gairdneri	BSA	—	1.0(K 3 hr)	a°	same as above	Marking, et al (1978), AMIC-6391
2"-iodo-3-nitro	Carassius	BSA	—	10 (K1)	a°	same as above	Marking,

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
salicylanilide	auratus						etal (1978), AMIC-6391
2'-iodo-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al(1978), AMIC-6391
2'-iodo-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1978), AMIC-6391
2'-iodo-3-nitrosalicylanilide	Ictalurus melas	BSA	--	10 (K1)	a*	same as above	Marking, etal (1978), AMIC-6391
2'-iodo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*	same as above	Marking,et al (1978), AMIC-6391
2'-iodo-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
2'-iodo-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1978), AMIC-6391
2'-methoxy-4'-nitro-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	10 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
2'-methoxy-4'-nitro-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
2'-methoxy-4'-nitro-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	10 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
2'-methoxy-4'-nitro-3-nitrosalicylanilide	Pimephales promelas	BSA	--	10 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
2'-methoxy-4'-nitro-3-nitrosalicylanilide	Ictalurus melas	BSA	--	10 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391

2'-methoxy-4'-nitro-3-nitrosalicyl-anilide	Leposis cyanellus	BSA	--	10 (K1)	8°	same as above	Herking, et al (1978), ANIC-639%
2'-methoxy-4'-nitro-3-nitrosalicyl-anilide	Leposis macrochirus	BSA	--	10 (K1)	8°	same as above	Herking, et al (1978), ANIC-639%
2'-methoxy-4'-nitro-3-nitrosalicyl-anilide	Perca flavescens	BSA	--	10 (K 3 hr)	8°	same as above	Herking, et al (1978), ANIC-639%
2',4'-dimethyl-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	8°	same as above	Herking, et al (1978), ANIC-639%
2',4'-dimethyl-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K 3 hr)	8°	same as above	Herking, et al (1978), ANIC-639%
2',4'-dimethyl-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K2)	8°	same as above	Herking, et al (1978), ANIC-639%
2',4'-dimethyl-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K4)	8°	same as above	Herking, et al (1978), ANIC-639%
2',4'-dimethyl-3-nitrosalicylanilide	Ictalurus punctatus	BSA	--	1.0 (K1)	8°	same as above	Herking, et al (1978), ANIC-639%
2',4'-dimethyl-3-nitrosalicylanilide	Leposis cyanellus	BSA	--	10 (K 3 hr)	8°	same as above	Herking, et al (1978), ANIC-639%
2',4'-dimethyl-3-nitrosalicylanilide	Leposis macrochirus	BSA	--	10 (K 3 hr)	8°	same as above	Herking, et al (1978), ANIC-639%
2',4'-dimethyl-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	8°	same as above	Herking, et al (1978), ANIC-639%
2',5'-dibromo-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	8°	same as above	Herking,et al (1978), ANIC-639%
2',5'-dibromo-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K1)	8°	same as above	Herking,et al (1978), ANIC-639%

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
2",5"-dibromo-3-nitrosalicylanilide	Cyprinus carpio	BSA	—	1.0 (K2)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Pimephales promelas	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Ictalurus melas	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Lepomis macrochirus	BSA	—	10(K 3 hr)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dibromo-3-nitrosalicylanilide	Perca flavescens	BSA	—	1.0 (K 3 hr)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosalicylanilide	Salmo gairdneri	BSA	—	1.0 (K 3 hr)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosalicylanilide	Carassius auratus	BSA	—	1.0 (K4)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosalicylanilide	Cyprinus carpio	BSA	—	1.0 (K2)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosalicylanilide	Pimephales promelas	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosalicylanilide	Ictalurus melas	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
2",5"-dimethoxy-4"-	Lepomis	BSA	—	1.0 (K2)	a*	same as above	Marking, et

chloro-3-nitrosa-licylanilide	cyanellus							al (1978), AMIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosa-licylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a°	same as above		Marking, et al (1978), AMIC-6391
2",5"-dimethoxy-4"-chloro-3-nitrosa-licylanilide	Perca flavescens	BSA	--	1.0 (K1)	a°	same as above		Marking, et al (1978), AMIC-6391
2",6"-diethyl-3,5-di nitrobenzanilide	Salmo gairdneri	BSA	--	10 (NTE)	a°	same as above		Marking, et al (1978), AMIC-6391
2",6"-diethyl-3,5-di nitrobenzanilide	Carassius auratus	BSA	--	10 (NTE)	a°	same as above		Marking, et al (1978), AMIC-6391
2",6"-diethyl-3,5-di nitrobenzanilide	Cyprinus carpio	BSA	--	10 (NTE)	a°	same as above		Marking, et al (1978), AMIC-6391
2",6"-diethyl-3,5-di nitrobenzanilide	Pimephales promelas	BSA	--	10 (NTE)	a°	same as above		Marking, et al (1978), AMIC-6391
2",6"-diethyl-3,5-di nitrobenzanilide	Ictalurus melas	BSA	--	10 (NTE)	a°	same as above		Marking, et al (1978), AMIC-6391
2",6"-diethyl-3,5-di nitrobenzanilide	Lepomis cyanellus	BSA	--	10 (NTE)	a°	same as above		Marking, et al (1978), AMIC-6391
2",6"-diethyl-3,5-di nitrobenzanilide	Lepomis macrochirus	BSA	--	10 (NTE)	a°	same as above		Marking, et al (1978), AMIC-6391
2",6"-diethyl-3,5-di nitrobenzanilide	Perca flavescens	BSA	--	10 (NTE)	a°	same as above		Marking, et al (1978), AMIC-6391
3-chloropropene-1,2 diol	Rasbora heteromorpha	BCFA and BSA	--	2,100(T2)	a°,c,e,f, hard(HW) or soft (SW) synthetic dilution water, or seawater for some	One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true.		Alabaster (1969), AMIC-9425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
					species		
3(p-chlorophenyl) 1,1-dimethylurea	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), ANIC-892
3,4-dichlorobenzyl methyl carbonate	Phormidium ambiguum	L	--	0.5-10.0(16 percent growth inhibited 14)	--	same as above	Otto (1978), ANIC-892
3,4-dihydroxybenzoic acid (protocatechuic acid)	Phormidium ambiguum	L	--	0.5-10.0(98 percent growth inhibited 14)	--	same as above	Otto (1978), ANIC-892
3,4,5-trihydroxy benzoic acid (gallic acid)	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1978), ANIC-892
3,5-dibrono-4-hydroxybenzonitrile	Phormidium ambiguum	L	--	0.5-10.0 (NTE)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than	Otto (1978), ANIC-892

							CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	
3,5-diiodo-4-hydroxy droxybenzonitrile	Phormidium subiguum	L	--	0.5-10.0 (NTE)	--		same as above	Otte (1978), ANIC-892
3,5-diethyltetrahyd hydro 1,3,5,2-thiodizine	Phormidium subiguum	L	--	0.5-10.0 (16percent growth inhibited 14)	--		same as above	Otte (1978), ANIC-892
3,5,7-triaza-1-azoni azonia adamantane	Phormidium subiguum	L	--	0.5-10.0 (NTE)	--		same as above	Otte (1978), ANIC-892
3'-bromo-3-nitrosali cylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*		Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Marking,et al (1978), ANIC-6391
3'-bromo-3-nitrosali cylanilide	Carassius auratus	BSA	--	10 (K 3 hr)	a*		same as above	Marking,et al (1978), ANIC-6391
3'-bromo-3-nitrosali cylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*		same as above	Marking, etal (1978), ANIC-6391
3'-bromo-3-nitrosali cylanilide	Pimephales promelas	BSA	--	1.0 (K 3 hr)	a*		same as above	Marking,et al (1978), ANIC-6391
3'-bromo-3-nitrosali cylanilide	Ictalurus melas	BSA	--	1.0 (K 3 hr)	a*		same as above	Marking,et al (1978), ANIC-6391
3'-bromo-3-nitrosali cylanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*		same as above	Marking,et al (1978), ANIC-6391
3'-bromo-3-nitrosali cylanilide	Lepomis macrochi[illegible]	BSA	--	1.0 (K1)	a*		same as above	Marking,et al (1978),

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
							AMIC-6391
3'-bromo-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.8 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
3'-chloro-3-nitrobenzanilide	Carassius auratus	BSA	--	18 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
3'-chloro-3-nitrobenzanilide	Cyprinus carpio	BSA	--	18 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
3'-chloro-3-nitrobenzanilide	Pimephales promelas	BSA	--	18 (K 3 hr-)	a*	same as above	Marking, et al (1978), AMIC-6391
3'-chloro-3-nitrobenzanilide	Ictalurus melas	BSA	--	18 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
3'-chloro-3-nitrobenzanilide	Lepomis cyanellus	BSA	--	18 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
3'-chloro-3-nitrobenzanilide	Lepomis macrochirus	BSA	--	18 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
3'-chloro-3-nitrobenzanilide	Perca flavescens	BSA	--	18 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
3'-chloro-5-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.8 (K4)	a*	same as above	Marking, et al (1978), AMIC-6391
3'-chloro-5-nitrosalicylanilide	Carassius auratus	BSA	--	18 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
3'-chloro-5-nitrosalicylanilide	Cyprinus carpio	BSA	--	18 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391

3'-chloro-5-nitro salicylanilide	Ictalurus melas	BSA	--	10 (K 3 hr)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-chloro-5-nitro salicylanilide	Lepomis cyanellus	BSA	--	10 (K 3 hr)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-chloro-5-nitro salicylanilide	Lepomis macrochirus	BSA	--	10 (K 3 hr)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-chloro-5-nitro salicylanilide	Perca flavescens	BSA	--	1.0 (K2)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-iodo-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K1)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-iodo-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	10 (K 3 hr)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-iodo-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-iodo-3-nitrosalicylanilide	Ictalurus melas	BSA	--	10 (K 3 hr)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-iodo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-iodo-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-iodo-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K 3 hr)	a*	same as above	Herking, et al (1978), AHIC-6391
3'-iodo-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	10 (K 3 hr)	a*	same as above	Herking, et al (1978), AHIC-6391
3',4'-dichloro-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and	Herking, et al (1978), AHIC-6391

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
						position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	
3",4"-dichloro-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0(K1)	a*	same as above	Marking, et al (1978), ANIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Pimephales promelas	BSA	--	0.1 (K2)	a*	same as above	Marking, et al (1978), ANIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Ictalurus melas	BSA	--	0.1 (K1)	a*	same as above	Marking, et al (1978), ANIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0(K1)	a*	same as above	Marking, et al (1978), ANIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	0.1 (K4)	a*	same as above	Marking, et al (1978), ANIC-6391
3",4"-dichloro-3-nitrosalicylanilide	Perca flavescens	BSA	--	0.1 (K4)	a*	same as above	Marking, et al (1978), ANIC-6391
4-cyano-2,6-diiodophenyl-N-methyl carbamate	Phormidium subiguum	L	--	0.5-10.0 (MTC)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were foods to	Otto (1978), ANIC-892

						controlling algae by environmental management. No practical environmental means were found.	
4"-azophenyl-3-nitro salicylanilide	Salmo gairdneri	BSA	--	0.1 (K1)	a°	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Herking, et al (1978), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Carassius auratus	BSA	--	1.0 (K 3 hr)	a°	same as above	Herking, et al (1978), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Cyprinus carpio	BSA	--	0.1 (K4)	a°	same as above	Herking, et al (1978), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Pimephales promelas	BSA	--	0.1 (K1)	a°	same as above	Herking, et al (1978), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Ictalurus melas	BSA	--	0.1 (K2)	a°	same as above	Herking, et al (1978), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Lepomis cyanellus	BSA	--	0.1 (K4)	a°	same as above	Herking, et al (1978), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Lepomis macrochirus	BSA	--	0.1 (K1)	a°	same as above	Herking, et al (1978), AMIC-6391
4"-azophenyl-3-nitro salicylanilide	Perca flavescens	BSA	--	0.1 (K1)	a°	same as above	Herking, et al (1978), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a°	same as above	Herking,et al (1978), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K1)	a°	same as above	Herking,et al (1978), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	0.1 (K4)	a°	same as above	Herking, etal (1978), AMIC-6391

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
4"-bromo-2-methyl-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
4"-bromo-2-methyl-3-nitrosalicylanilide	Perca flavescens	BSA	--	0.1(K2)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	0.1 (K 3 hr)	a*	same as above	Marking, etal (1978), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-bromo-3-nitrosalicylanilide	Lepomis	BSA	--	1.0 (K1)	a*	same as above	Marking,et

cyclanilide	macrochirus						al (1978). ANIC-6391
4"-bromo-3-nitrosalicylanilide	Perca flavescens	BSA	--	0.1 (K1)	a°	same as above	Marking.et al (1978). ANIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	0.1 (K1)	a°	same as above	Marking.et al (1978). ANIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Carassius auratus	BSA	--	1.0(K1)	a°	same as above	Marking.et al (1978). ANIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	0.1 (K4)	a°	same as above	Marking. etal (1978). ANIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Pimephales promelas	BSA	--	0.1 (K2)	a°	same as above	Marking.et al (1978). ANIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Ictalurus melas	BSA	--	0.1 (K4)	a°	same as above	Marking.et al (1978). ANIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	0.1(K4)	a°	same as above	Marking.et al (1978). ANIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	0.1 (K2)	a°	same as above	Marking.et al (1978). ANIC-6391
4"-bromo-5-bromo-3-nitrosalicylanilide	Perca flavescens	BSA	--	0.1 (K1)	a°	same as above	Marking.et al (1978). ANIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a°	same as above	Marking. et al (1978). ANIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K 3 hr)	a°	same as above	Marking. et al (1978). ANIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a°	same as above	Marking. et al (1978). ANIC-6391
4"-chloro-2"-methyl-	Lepomis	BSA	--	1.0 (K1)	a°	same as above	Marking. et

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
nitrosalicylanilide	macrochirus						al (1978), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Carassius auratus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
4"-chloro-2"-methyl-nitrosalicylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
4"-chloro-3-nitrosal icylanilide	Salmo gairdneri	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-chloro-3-nitrosal icylanilide	Carassius auratus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-chloro-3-nitrosal icylanilide	Cyprinus carpio	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-chloro-3-nitrosal icylanilide	Pimephales promelas	BSA	--	1.0 (K3 hr)	a*	same as above	Marking, et al (1978), AMIC-6391
4"-chloro-3-nitrosal icylanilide	Ictalurus punctatus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-chloro-3-nitrosal icylanilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1978), AMIC-6391
4"-chloro-3-nitrosal icylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking,et al (1978), AMIC-6391

4"-chloro-2-nitrosalicylanilide	Perca flavescens	BSA	—	1.0 (K1)	8°	same as above	Herking,et al (1978). AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Salmo gairdneri	BSA	—	0.1 (K1)	8°	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Carassius auratus	BSA	—	1.0 (K1)	8°	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Cyprinus carpio	BSA	—	0.1 (K2)	8°	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Pimephales promelas	BSA	—	0.1 (K2)	8°.	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Ictalurus melas	BSA	—	1.0 (K 3 Mp)	8°	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Lepomis cyanellus	BSA	—	0.1 (K4)	8°	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Lepomis macrochirus	BSA	—	0.1 (K2)	8°	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-bromo-nitrosalicylanilide	Perca flavescens	BSA	—	0.1 (K1)	8°	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-nitrosalicylanilide	Salmo gairdneri	BSA	—	1.0 (K1)	8°	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-nitrosalicylanilide	Carassius auratus	BSA	—	10 (K2)	8°	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-nitrosalicylanilide	Cyprinus carpio	BSA	—	10 (K4)	8°	same as above	Herking, et al (1978). AMIC-6391
4"-chloro-5-nitrosalicylanilide	Pimephales promelas	BSA	—	1.0(K1)	8°	same as above	Herking, et al (1978). AMIC-6391

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
4'-chloro-5-nitro salicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978). AMIC-6391
4'-chloro-5-nitro salicylanilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978). AMIC-6391
4'-chloro-5-nitro salicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978). AMIC-6391
4'-chloro-5-nitro salicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978). AMIC-6391
4'-iodo-3-nitro salicylanilide	Ictalurus nebulosus (2.5-6.0in.)	L	--	9.0 (K)	a;c;g	Brown bullheads were subjected to solutions of 4'-iodo-nitrosalicylanilide in laboratory jars some of which contained bottom sediments of different depths up to 2 inches. Upon exposure to the toxicant, some of the bullheads buried themselves in the sediments thereby surviving the chemical treatment 8 to 16 days. The phenomenon of burying appeared to be temperature dependent.	Leob, et al (1966). AMIC-6199
4'-iodo-3-nitro salicylanilide	Ictalurus nebulosus (2.9-6.8 IN.)	L	--	2.5 (partial K)	a;c;g	same as above	Leob, et al (1966). AMIC-6199
4'-iodo-3-nitro salicylanilide	Salmo gairdneri	BSA	--	0.1 (K2)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Marking, et al (1978). AMIC-6391
4'-iodo-3-nitro salicylanilide	Carassius auratus	BSA	--	1.0 (K 3 hr)	a*	same as above	Marking,et al (1978). AMIC-6391
4'-iodo-3-nitro salicylanilide	Cyprinus carpio	BSA	--	0.1 (K1)	a*	same as above	Marking, et al (1978). AMIC-6391
4'-iodo-3-nitro	Pimephales	BSA	--	0.1 (K1)	a*	same as above	Marking,et

salicylanilide	promelas						al (1978), AMIC-6391
4"-iodo-3-nitrosalic ylanilide	Ictalurus melas	BSA	--	0.1 (K1)	a*	same as above	Harking, etal (1978), AMIC-6391
4"-iodo-3-nitrosalic ylanilide	Lepomis cyanellus	BSA	--	1.0 (K 3 hr)	a*	same as above	Harking,et al (1978), AMIC-6391
4"-iodo-3-nitrosalic ylanilide	Lepomis macrochirus	BSA	--	0.1 (K2)	a*	same as above	Harking, et al (1978), AMIC-6391
4"-iodo-3-nitrosalic ylanilide	Perca flavescens	BSA	--	0.1(K1)	a*	same as above	Harking,et al (1978), AMIC-6391
4"-iodo-5-nitrosalic ylanilide	Salmo gairdneri	BSA	--	1.0 (K1)	a*	same as above	Harking, et al (1978), AMIC-6391
4"-iodo-5-nitrosalic ylanilide	Carassius auratus	BSA	--	1.0 (K2)	a*	same as above	Harking, etal (1978), AMIC-6391
4"-iodo-5-nitrosalic ylanilide	Cyprinus carpio	BSA	--	1.0 (K2)	a*	same as above	Harking, et al(1978), AMIC-6391
4"-iodo-5-nitrosalic ylanilide	Pimephales promelas	BSA	--	1.0 (K1)	a*	same as above	Harking,et al (1978), AMIC-6391
4"-iodo-5-nitrosalic ylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Harking, et al(1978, AMIC-6391
4"-iodo-5-nitrosalic ylanilide	Lepomis cyanellus	BSA	--	1.0 (K2)	a*	same as above	Harking, et al(1978), AMIC-6391
4"-iodo-5-nitrosalic ylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Harking, et al(19[illegible]), AMIC-6[illegible]91

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
4"-iodo-5-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Herking, et al (1978), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Salmo gairdneri	BSA	--	1.0 (K1)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Herking, et al (1978), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Carassius auratus	BSA	--	10 (K 3 hr)	a*	same as above	Herking, et al (1978), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Cyprinus carpio	BSA	--	10 (K 3 hr)	a*	same as above	Herking, et al (1978), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Pimephales promelas	BSA	--	10 (K 3 hr)	a*	same as above	Herking, et al (1978), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Herking, et al (1978), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Lepomis cyanellus	BSA	--	10 (K1)	a*	same as above	Herking, et al (1978), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Herking, et al (1978), AMIC-6391
4"-methoxy-2"-nitro-3-nitrosalicylanilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Herking, et al (1978), AMIC-6391
5-bromo-3-nitrosalicylic acid	Salmo gairdneri	BSA	--	1.0 (K 3 hr)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several	Herking, et al (1978), AMIC-6391

							compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	
5-bromo-3-nitrosalicylic acid	Carassius auratus	BSA	--	1.0 (K1)	a°		same as above	Marking, et al (1978). AMIC-6391
5-bromo-3-nitrosalicylic acid	Cyprinus carpio	BSA	--	1.0 (K1)	a°		same as above	Marking, et al (1978). AMIC-6391
5-bromo-3-nitrosalicylic acid	Pimephales promelas	BSA	--	1.0 (K1)	a°		same as above	Marking, et al (1978). AMIC-6391
5-bromo-3-nitrosalicylic acid	Ictalurus melas	BSA	--	1.0 (K1)	a°		same as above	Marking, et al (1978). AMIC-6391
5-bromo-3-nitrosalicylic acid	Lepomis cyanellus	BSA	--	1.0 (K1)	a°		same as above	Marking, et al (1978). AMIC-6391
5-bromo-3-nitrosalicylic acid	Lepomis macrochirus	BSA	--	1.0 (K1)	a°		same as above	Marking, et al (1978). AMIC-6391
5-bromo-3-nitrosalicylic acid	Perca flavescens	BSA	--	0.1 (K1)	a°		same as above	Marking, et al (1978). AMIC-6391
5-bromo-3-sec-butyl-6-methyluracil	Phormidium subincum	L	--	0.5-10.0 (NTE)	--		Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$ alone. Cooper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otte (1978). AMIC-892
5-methyl 2-(1-methyl-n-heptyl)-4,6-dinitrophenyl-	Rasbora heteromorpha	SCFA and BSA	--	0.52 (T2)	a°,c,e,f, hard (HW) or soft		One hundred sixty-four pesticides, wetting agents, and miscellaneous water pollutants showed a	Alabaster (1969). AMIC-5425

Compound	Organism	Field Study	Field Location	Toxicity, Active Ingredient, Ppm	Experimental Variables, Controlled or Noted	Comments	Reference
thiol carbonate					(SW) synthetic dilution water, or seawater for some species	wide range of toxicity spanning 12 orders of magnitude. Knowing the toxicity and percentage of all components of a formulation did not result in easy predictability of the toxicity of a mixture of materials. Sometimes pesticides were most toxic in hard water and sometimes the opposite was true. Testing the actual material as sold was found to be essential.	
5,8-dihydroxyl-1,2,3,4,9,9-hexachloro-1,4-methano-1,4-dihydronaphthalene	Phormidium ambiguum	L	—	0.5-10.0 (33 percent growth inhibited 14)	—	Of 74 chemicals evaluated as algicides, only 9 were more toxic than CuSO4. None inhibited growth of mat-forming algae for more than 2 weeks. CuSO4 formulated with certain wetting agents was more toxic than CuSO4 alone. Copper chloramine was also found to be more toxic than CuSO4. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No practical environmental means were found.	Otto (1970), ANIC-892
5"-chloro-2"-methoxy-3-nitrosalicyl anilide	Salmo gairdneri	BSA	—	1.0 (K 3 hr)	a*	Twenty-nine nitrosalicylanilides and related compounds were evaluated for their relative toxic effect to selected fish. Potency varied with type and position of substitutions. Several compounds were selectively toxic to yellow perch. Goldfish were the most resistant to the salicylanilides.	Marking, et al (1970), ANIC-6391
5"-chloro-2"-methoxy-3-nitrosalicyl anilide	Carassius auratus	BSA	—	10 (K1)	a*	same as above	Marking, et al (1970), ANIC-6391
5"-chloro-2"-methoxy-3-nitrosalicyl anilide	Cyprinus carpio	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1970), ANIC-6391
5"-chloro-2"-methoxy-3-nitrosalicyl anilide	Pimephales promelas	BSA	—	1.0 (K1)	a*	same as above	Marking, et al (1970), ANIC-6391

5"-chloro-2"-methoxy -3-nitrosalicyl anilide	Ictalurus melas	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
5"-chloro-2"-methoxy -3-nitrosalicyl anilide	Lepomis cyanellus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
5"-chloro-2"-methoxy -3-nitrosalicyl anilide	Lepomis macrochirus	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
5"-chloro-2"-methoxy -3-nitrosalicyl anilide	Perca flavescens	BSA	--	1.0 (K1)	a*	same as above	Marking, et al (1978), AMIC-6391
6,7-Dihydrodipyrido (1,2-a:2'1'-e) pyrazidiinium salt (Diquat)	Phormidium ambiguum	L	--	0.5-10.0 (66 percent growth inhibited 14)	--	Of 74 chemicals evaluated as algicides, only 9 were more toxic than $CuSO_4$. None inhibited growth of mat-forming algae for more than 2 weeks. $CuSO_4$ formulated with certain wetting agents was more toxic than $CuSO_4$. Copper chloramine was also found to be more toxic than $CuSO_4$. No wetting agents were found to be inhibitory at the concentrations investigated (0.05 and 0.005 ppm). Also reported are factors affecting growth of algae in canals to determine whether there were leads to controlling algae by environmental management. No partial environmental means were found.	Otto (1970), AMIC-892

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APPENDIX C

IDENTIFICATION OF COMMERCIAL CHEMICALS

(Note: Many of the names included in this list are tradenames and should be treated as such.)

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ABS	Alkyl benzene sulfonate
Acriflavine	Mixtures of 2,8-diamino-10-methylacridinium chloride and 2,4-diaminoacridine
Acrolein	see Aqualin
Actusol	No information available
Aflatoxin B1	C17H1206
Agridip	No information available
Amitrole	3-Amino-1,2,4-triazole
Amitrol-T	3-Amino-1,2,4-triazole-ammonium thiocyanate mixture
Amphenone B	3,3-Bis [p-aminophenyl]-2-butanone-2-dihydrochloride
Antimycin A	C28H40N209
Aphitox	Fluoroacetamide and Lissapol
AQ	No information available
Aquaclene	No information available
Aquaclene 100	No information available
Aqualin	2-Propenal
Aquathol	Disodium salt of endothal (19.2 percent-H-Pennsalt)
Aroclor 1221	Commercial PCB with 21 percent chlorine
Aroclor 1242	Commercial PCB with 42 percent chlorine
Aroclor 1248	Commercial PCB with 48 percent chlorine
Aroclor 1254	Commercial PCB with 54 percent chlorine
Aroclor 1260	Commercial PCB with 60 percent chlorine
Aroclor 1262	Commercial PCB with 62 percent chlorine
Asuntol (Sheep dip)	see Coumaphos
Asulum	Methyl-4-aminobenzene sulfonyl-carbamate
Atlas 1901	No information available
Atlavar	Sodium chlorate, 2,4-D, Monuron mixture

Chemical Name	Composition
Atrazine	2-Chloro-4-ethylamine-6-isopropyl-amino-s-triazine
Avadex	S-2,3-Dichloroallyl diisopropylthio-carbamate
Avadex BW	S-2,3,3-Trichloroallyl-diisopropyl thiolcarbamate
Azinphosmethyl	see Guthion
Balan	see Benefin
Banner DG01	No information available
Banner DG02	No information available
Banner DG03	No information available
Banner DG04	No information available
Banvel	3,6-Dichloro-o-anisic acid
Barban	4-Chloro-2-butynyl-m-chlorocarbanilate
Basol AD6	No information available
Basol 99	No information available
Bayer 39007	N-methyl 2 isopropoxyphenyl carbamate
Bayluscide	2',5-Dichloro-4'-nitrosalicylanilide ethanolamine
Baytex	see Fenthion
Baywood 43	Maleic hydrazide, 2,4-D as triethanol, amine salt, wetting agent, water
Benazolin	No information available
Bensulide	see Betasan
Betasan	S-(O,O-Diisopropyl phosphorodithioate) ester of N-(2-mercaptoethyl) benzenesulfonamide
BHC	Benzene hexachloride
Borasceu	No information available
BP	No information available
BP 1002	No information available
BP 1100	No information available
BP 1100X	No information available
Brakontrole	4-CPA
Bromophos	see OMS-658
Bromoxynil	3,5-Dibromo-4-hydroxybenzonitrile
Busan 90	No information available
Busan 881	Organosulfur formulation
Canal Bank Weedkiller	No information available
Captan	cis-N-((trichloromethyl)thio)-4-cyclohexene-1,2-dicarboximide
Carbaryl	1-Naphthyl methylcarbamate
Carbophenothion	see Trithion
Carbyne	see Barban
Casol	No information available
Casoron	see Dichlobenil
Casoron G	see Dichlobenil
Casoron 133	see Dichlobenil
Chem-Hoe	Isopropyl N-phenylcarbamate
Chevron NI-O	No information available

Chemical Name	Composition
Chloramphenicol	(Chloromycetin) D-(-)-threo-2-dichloroacetamido-1-p-nitrophenyl-1,3-propanediol
Chloral hydrate	2,2,2-Trichloro-1,1-ethanediol
Chloramine	(N-Chloro-p-toluenesulfonamido)sodium
Chlorax	No information available
Chlordane	Mixture of 60 percent octachloro-4,7-methanotetrahydroindane and 40 percent related compounds
Chlorea	see Monuron
Chlorfenvinfos	2,4-Dichlorophenyl-1-chloroethylene diethyl phosphate
Chloroflurazole	No information available
Chloropropylate	No information available
Chlorthiamid	No information available
CI	No information available
Cleanosol	No information available
Clophen A30	No information available
Clophen A40	No information available
Clophen A50	Commercial mixture of PCB
Clophen A60	No information available
Compass	No information available
Cooper's Fly Dip	see Chlorfenvinfos
Co-Ral	0,0-Diethyl 0-3-chloro-4-methyl-2-oxo-2H-1-benzopyran-7-yl-phosphorothioate
Corexit 7664	No information available
Corexit 8666	No information available
Coumaphos	see Co-Ral
Craine OSR	No information available
Crossguard	No information available
Crotothane	see Karathane
Crow Solvent M	No information available
Cunilate RQ 24	Oxine copper
Cuprinol	No information available
CX	No information available
Dalacide	Dalapon-Na, Sodium 2,2,3,trichloro-propionate
Dalapon	2,2 Dichloropropionic acid
D.B. Granular	No information available
DBP	4,4'-Dichlorobenzophenone
DDD	see TDE
DDE	1,1-Dichloro-2,2-bis (p-chlorophenyl) ethylene
DDT	1,1,1-Trichloro-2,2-bis(p-chlorophenyl) ethane
DDVP	0,0-dimethyl-0-(2,2-dichlorovinyl) phosphate
Decamethonium dibromide	No information available
De De Tane	see DDT
Delrad	Dehydroabiethylamine acetate

Chemical Name	Composition
Delrad 70	Technical grade of dehydroabietylamine
Demeton methyl	see Meta-Systox
Dermol	No information available
Diazinon	0,0-Diethyl 0-(2-isopropyl-6-methyl-4-pyrimidinyl) phosphorothioate
Dicamba	see Banvel
Dicapthon	0-(2-Chloro-4-nitrophenyl)0,0-dimethyl phosphorothioate
Dichlobenil	2,6-Dichlorobenzonitrile
Dichlone	2,3-Dichloro-1,4-naphthoquinone
Dichlorofenthion	see VC-13
Dichlorophen	2,2'-Methylenebis [4-chlorophenol]
Dichlorvos	see DDVP
Dicofol	1,1-bis(p-Chlorophenyl)-2,2,2-trichloroethanol
Dieldrin	Not less than 85 percent of 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-exo-5,8-dimethanonaphthanlene
Difolatan	cis-N-[(1,1,2,2-Tetrachloroethyl)thio]-4-cyclohexene-1,2-dicarboximide
Dimanin	Alkyldimethylbenzyl ammonium chloride plus urea
Dimecron	see Phosphamidon
Dimethoate	0,0-Dimethyl S-(N-methylcarbamyl-methyl) phosphorodithioate
Dimite	1,1-bis(p-Chlorophenyl)ethanol
Dinocap	see Karathane
Dinoseb	2-(sec-Butyl)-4,6-dinitrophenol
Diphenamid	N,N-Dimethyl-2,2-diphenylacetamid
Dipterex	see Dylox
Diquat	6,7-Dehydrodipyrido [1,2a:2',1'c] pyrazinedium salts
Dispersol SD	No information available
Disulfoton	0,0-Diethyl-S-[2-(ethylthio)-ethyl] phosphorodithioate
Di-Syston	see Disulfoton
Diuron	3-(3,4-Dichlorophenyl)-1.1-dimethylurea
DNOC	2-Methyl-4,6-dinitrophenol sodium salt
Dobs JN	No information available
Dobs 055	No information available
Dowicide A	O-phenylphenol, sodium salt
Dowicide G	Sodium pentachlorophenate
Dowpon	see Dalapon
Doxide (C 102)	No information available
DSS	see Dioctyl sodium sulfosuccinate
DTMC	see Dicofol
Dursban	0,0-Diethyl 0-3,5,6-trichloro-2-pyridyl phosphoro thioate
Dylox	0,0-dimethyl (2,2,2-trichloro-1-hydroxyethyl) phosphonate
E-314	No information available
EC-90	No information available

Chemical Name	Composition
Ecomal 13086	2,4,5-T (as butoxy ethyl ester)
Emcol H-146	No information available
Emcol 702	No information available
EMID	2,4-Dichlorophenoxy-acetamide
Emkem Spill Wash	No information available
Empilan	No information available
Emulsifier Blend 350	No information available
Endosulfan	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin-3-oxide
Endothal	see Endothall
Endothall	7-Oxabicylo(2.2.1)heptane-2,3-dicarboxylic acid
Endrin	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-endo-5,8-dimethanonaphthalene
Epichlorohydrin	1-Chloro-2,3-epoxypropane
Eptam	S-Ethyl dipropylthiocarbamate
Eserine sulfate	No information available
ESSO Solvent FG-155	No information available
Essolvene	No information available
Ethanediol	No information available
Ethion	0,0,0',0'-Tetraethyl S,S'-methylene biophosphorodithioate
Ethomeen S-25	No information available
Ethyl Parathion	see Parathion
EVIK	2-(Ethylamino)-4-(isopropylamino)-6-(methylthio)-s-triazine
Fenac	2,3,6-Trichlorophenylacetic acid or sodium salt
Fenoprop	No information available
Fenthion	0,0-Dimethyl-0-[4](methylthio)-m-tolyl]-phosphorothioate
Fentin acetate	No information available
Fenuron	3 Phenyl-1,1-dimethylurea
Finasol ESK	No information available
Finasol OSR2	No information available
Finasol SC	No information available
Flock O.P. Fly Dip	see Dichlorofenthion
Florescein sodium	9-(O-carboxyphenyl)-6-hydroxy-3-isoxanthenone
Fluorokill	Fluoroacetamide
F.O. 300B	No information available
Foilzoil	No information available
Folpet	N-(Trichloromethylthio)-phthalimide
Formothion	Phosphorodithioic acid 0,0-dimethyl ester S-ester with N-formyl-2-mercapto-N-methylacetamide
Furfural	2-Furaldehyde
Gamlen CW	No information available
Gamlem D	No information available
Gamlen OSR	No information available

Chemical Name	Composition
Gamlen PBX	No information available
Gamlen WBX	No information available
Gamma BHC	see Lindane
Gesapax	see EVIK
Globe Terramycin Pet Tabs	Oxytetracycline hydrochloride
Gloquat C	No information available
Gramoxone W	see Paraquat
Griseofulvin	7-Chloro-2',4,6-trimethoxy-6'β-methyl-spiro-[benzofuran-2(3H),1' [2] cyclohexene]-3,4'-dione
Gulf Agent 1009	No information available
Guthion	O,O-Diethyl-s-[4-oxo-1,2,3-benzotriazin-3(4H)-ylmethyl]-phosphorodithioate
Heptachlor	74 percent 1,4,5,6,7,8,8a-Heptachloro-3a,4,7a-tetrahydro-4,7-methanoindene
Heptachlor epoxide	Photoisomer of Heptachlor
Herbane	3-(Hexahydro-4,7-methanoinden-5-yl)-1, a-dimethylurea
Hillvale Fly Dip	Dichlorofenthion
Histamine phosphate	No information available
Hobstone OSD	No information available
Hoc SC 1780	No information available
Holl-Chem 622	No information available
Houghtosolve	No information available
Hydrothol 191	Mono (N,N-dimethylalkylamine) salt of endothall
IAA	Indole-3-acetic acid
Ialine Brushweed Killer	No information available
Ialine grass growth regulator (Regulox)	see Maleic hydrazide
Ialine Vergicide Weedkiller D	No information available
Ialine Vergicide Weedkiller	see Vergemaster
I.C.I. Summer Sheep Dip	see Pyrimithate
Ioxynil	3,5-Diodo-4-hydroxybenzonitrile
Ioxyril Na	No information available
IPC	see Chem Hoe
Jansolv-60	No information available
Juglone	5-Hydroxy-1,4-naphthoquinone
Karathane	2-(1-Methylheptyl)-4,6-dinitrophenyl crotonate
Karmex	see Diuron
Kelthane	see Dicofol
Ketoendrin	No information available
Klofos	No information available
LAS	Linear alkylate sulfonate
Lenacil	3-Cyclohexyl-6,7-dihydro-1H-cyclopentapyrimidine-2,(3H,5H)-dione
Lindane	1,2,3,4,5,6-Hexachlorocyclohexane containing at least 99 percent gamma isomer

Chemical Name	Composition
Linuron	3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea
Lirostanol	Fentin acetate
Lissapol IPA	Mixture of the sodium salts of sulfated fatty alcohols
Lissapol NM	Mixture of the sodium salts of sulfated fatty alcohols
Lissapol NX	Mixture of the sodium salts of sulfated fatty alcohols
Luhrol APNS	No information available
Luorol L	No information available
Magic Power	No information available
Malathion	0,0-Dimethyl phosphorodithioate of diethyl mercaptosuccinate
Maleic hydrazide	1,2-Dihydro-3,6-pyridazinedione
Menazon	No information available
Mancozeb	No information available
Maneb	Manganous ethylene bisdithiocarbamate
Manoxol	No information available
MCPA	2-Methyl-4-chlorophenoxyacetic acid
Mecarbam	No information available
Mecoprop	No information available
Menazon	S-(4,6-Diamino-s-triazin-2-ylmethyl) 0,0-dimethyl phosphorodithioate
Meta-Systox	Isomeric mixture of 0-[2-(ethylthio) ethyl]0,0-dimethyl phosphorothioate
Methoxychlor	2,2-bis(p-Methoxyphenyl)-1,1,1-trichloroethane
Methyl parathion	0,0-Dimethyl 0-p-nitrophenyl phosphorothioate
Methylpentynol	No information available
Mevinfos (Mevinphos)	2-Carbomethoxy-1-methylvinyl dimethyl phosphate, α isomer
Milbex	No information available
MM	No information available
Moaspill	No information available
Mobilsol	No information available
Molinate	see Ordram
Monoxone	No information available
Monuron	3-(p-Chlorophenyl)-1,1-dimethylurea
Morphothion	No information available
MS-222	Tricaine methanesulfonate
Mystox LSC-P	No information available
Mystox LSE-L	No information available
Mystox LSE-P	No information available
Mystox LSL	No information available
Mystox LSL-L	No information available
Mystox LSL-P	No information available
N-3452	Alkyl(C_8-C_{18})dimethyl benzyl ammonium chloride

Chemical Name	Composition
N-3514	2-Chloro-1-nitropropane
NA	No information available
Nabam	Disodium ethylenebisdithiocarbamate
Nalco 201	Chlorinated phenol formulation
Nalco 240	Organobromine formulation
Nalco 243	Organosulfur formulation
Neburon	1-n-Butyl-3-(3,4-dichlorophenyl)-1-methylurea
Nemagon	1,2-Dibromo-3-chloropropane
New BP 1100	No information available
Nitrofurazone	5-Nitro-2-furaldehyde semicarbazone
Nitrofen	2,4-Dichlorophenyl p-Nitrophenyl ether
Norea	see Herban
Norseman	No information available
NPH 1253	see Ioxynil
NPH 1313	see Mecoprop
Nucidol Diazinon Sheep Dip	see Diazinon
Nystatin	No information available
OD	No information available
Oil Herder	No information available
Ordram	S-Ethyl hexahydro-1H-azepine-1-carbothioate
Omazene (Omazine)	Cupric dihydrazinium sulfate
OMS-658	O-(4-Bromo-2,5-dichlorophenyl) O,O-dimethyl phosphorothioate
Paraquat	1,1'-Dimethyl-4,4'-bipyridinium dichloride or 1,1'-Dimethyl-4,4'-bipyridiniumbis [methylsulfate]
Parathion	O,O-Diethyl-O-p-nitrophenyl phosphorothioate
PC	see Phosphocreatine
PCB	Polychlorinated biphenyl
Pebulate	see Tillam
Penetone X	No information available
Perolin No. 5	No information available
Perthane	1,1-Dichloro-2,2-bis(p-ethylphenyl) ethane (88 percent) plus related compounds, 12 percent
Petrolite W-1439	No information available
Phenkapton (Phencapton)	O,O-Diethyl-S-(2,5-dichlorophenyl-thiomethyl) phosphorodithioate
Phenobarbital	5-Ethyl-5-phenylbarbituric acid
Phenoxylene	No information available
Phenoxytol (Phenoxetol)	2-Phenoxyethanol
Phorate	O,O-Diethyl S-(ethylthio)-methyl phosphorodithioate
Phordene	No information available
Phosalone	see Zolone
Phosdrin	see Mevinfos

Chemical Name	Composition
Phosphamidon	2-Chloro-N,N-diethyl-3-(dimethoxy-phosphinyloxy)crotonamide
Phosphocreatine	N-(Phosphonoamidino)sarcosine
Phostox	No information available
Photoaldrin	Photoisomer of Aldrin
Photodieldrin	Photoisomer of Dieldrin
Phygon	see Dichlone
Picloram	4-Amino-3,5,6-trichloropicolinic acid
PMA	Pyridylmercuric acetate
Polycell Product	Sodium carboxymethyl cellulose
Polyclens	No information available
Polycomplex A	No information available
Polycomplex A-11	No information available
Polyotic	Tetracycline hydrochloride
Polyram	Mixture of 5.2 parts by weight (83.9 percent) of ammoniates of [ethylene-bis-(dithiocarbamate)] zinc with 1 part by weight (16.1 percent) ethylene bis[dithiocarbamatic acid], bimolecular and trimolecular cyclic anhydrosulfides and disulfides
Praparat Alfol WV 1019	Hexadecanol
Princep	2-Chloro-4,6-bis(ethylamino)-s-triazine
Procaine hydrochloride	p-Aminobenzoyldiethylaminoethanol hydrochloride
Pro-Noxfish	Rotenone
Propanil	3,4-Dichloropropionanilide
Propham	see Chem Hoe
Protim	Copper pentachlorophenate plus chloronaphthalene and dieldrin
PVP-Iodine	1-Vinyl-2-pyrrolidinone polymers, iodine complex
Pyramin	5-Amino-4-chloro-2 phenyl-3 (2H)-pyridazinone
Pyrazon	see Pyramin
Pyrimithate	Phosphorothioic acid O-[2-dimethylamino)-6-methyl-4-pyrimidinyl] O,O-diethyl ester
Quinaldine	2-Methylquinoline
R-1910	Ethyl-N,N-diisobutyl thiolcarbamate
Raynap Sol B	No information available
RD 14639	N-methyl carbamate derivative
Reglone	Diquat-dibromide
Rhodamine B	[9-(O-carboxyphenyl)-6-diethylamino)= 3H-xanthene-3-ylidene]diethylammonium chloride
Ridzlik	No information available
Roccal	Benzalkonium chloride
Rola OSD	No information available
Ro-Neet	S-Ethyl N-ethyl-N-cyclohexylthio-carbamate

Chemical Name	Composition
Rosin Amine D	see Delrad 70
S.D. 3562 (Bidrin)	Phosphoric acid dimethyl ester, ester with cis-3-hydroxy-N,N-dimethylcrotanamide
S.D. 8211	Phosphoric acid, 2-chloro-1-(2,5-dichlorophenyl)vinyl dimethyl ester
S.D. 8447	2-Chloro-1-(2,4,5-trichlorophenyl)vinyl dimethyl phosphate
Seasweep	No information available
Sefoil	No information available
Sesamex	No information available
Sevin	see Carbaryl
Shamash R1885	No information available
Shell D-50	2,4,D amine (triethanolamine salt)
Silvex	2-(2,4,5-Trichlorophenoxy)-propionic acid
Simazine	see Princep
Slickgone 1	No information available
Slickgone 2	No information available
Slix	No information available
S.N. 5215	No information available
Snowdrift SC98	No information available
Spill Remover	No information available
Spill-X	No information available
Streptomycin Sulfate	$2\ C_{21}\ H_{39}N_7O_{12}.3H_2SO_4$
Strobane	Terpene polychlorinates
Sulfisoxazole	N^1-(3,4-Dimethyl-5-isoxazolyl) sulfanilamide
Sulmet	(Sodium sulfamethazine) sodium (4,6-dimethyl-2-sulfanilamidopyramidine)
Sumithion	O,O-Dimethyl O-(4-nitro-m-tolyl)-phosphorothioate
Sutan	S-Ethyl diisobutylthiocarbamate
TCC	3,4,4'-Trichlorocarbanilide
TCP	Tritolyl phosphate ($C_{21}H_{21}O_4P$)
TDE	1,1-Dichloro-2,2-bis(p-chlorophenyl) ethane
TEPA	tris-(1-Aziridinyl)phosphine oxide
TEPP	Tetraethyl pyrophosphate
Tetradifon	4'-Chlorophenyl 2,4,5-trichlorophenyl sulfone
TFN (Lamprecid)	3-Trifluoromethyl-4-nitrophenol, sodium salt
Thimet	see Phorate
Thiolutin	No information available
Thiumet	see Polyram
Thyroxine	No information available
Tillam	S-Propyl butylethylthiocarbamate
Timsan	6.25 Percent ethyl mercury phosphate
TN	No information available

Chemical Name	Composition
TCK	see Nitrofen
Tordon C	Picloram (potassium salt) plus mecoprop
Tordon M	Picloram (potassium salt) plus MCPA
Toxaphene	Chlorinated camphene with 67-69 percent chlorine
Toxicn	No information available
Treflan E.C.	see Triflurolin
Trifluralin	α,α,α-Trifluoro-2,6-dinitro-N,N-dipropyl-dipropyl-p-toluidine
Trioxone	No information available
Trithion	S-[(p-Chlorophenyl)thio]methyl] o,o-diethyl phosphorodithioate
Trixabon	Ioxynil plus Dimexan, cycluron, BIPC, emulsifier, methyl alcohol, propionic acid, and solvent naphtha
Tubotox	see Dinoseb
Ureabor	No information available
Vamidothion	No information available
Vapam	Sodium N-methyl-dithiocarbamate
VC-13	O-2,4-Dichlorophenyl O,O-diethyl phosphorothioate
Velsicol AR 500	No information available
Venzar	see Lenacil
Vergemaster	No information available
Vernam	S-Propyl dipropylthiocarbamate
Vernolate	see Vernam
Weedazol	see Amitrole
Weedazol T-L	No information available
WL 4205	A triazine
Young's Defly	see Trithion
Zectran	4-Dimethylamino 3,5-Xylyl methyl-carbamate
Zolone	O,O-Diethyl S[(6-chloro-2-oxobenzoxazolin-3-yl)methyl] phosphorodithioate
2,4-D	2,4-Dichlorophenoxyacetic acid
2,4,5-T	2,4,5-Trichlorophenoxyacetic acid